

THE IRON AGE

239 West 39th St., New York



Owned, Published and Copyrighted
by



CHILTON COMPANY
(Incorporated)

Executive and Publication Offices,
Chestnut and 56th Sts., Philadelphia, Pa.

C. A. MUSSELMAN, President
FRITZ J. FRANK, Executive Vice-President
FREDERIC C. STEVENS, Vice-President
JOSEPH S. HILDRETH, "
GEORGE H. GRIFFITHS, "
EVERETT B. TERHUNE, "
ERNEST C. HASTINGS, "
WILLIAM A. BARBER, Treasurer
JOHN BLAIR MOFFETT, Secretary

FRITZ J. FRANK, President

J. H. VAN DEVENTER
Editor

G. L. LACHER
Managing Editor

T. H. GERKEN
News Editor

R. E. MILLER
Machinery Editor

F. J. WINTERS

T. W. LIPPERT

A. I. FINDLEY
Editor Emeritus

L. W. MOFFETT
Washington

R. A. FISKE
Chicago

F. L. PRENTISS
Cleveland

G. EHNRSTROM, JR.
Pittsburgh

BURNHAM FINNEY
Detroit

GERARD FRAZAR
Boston

R. G. MCINTOSH
Cincinnati

Contents—February 7, 1935

Thrift and Spendthrift.....	11
Determining Corrosion Resistance of Stainless Steels.....	12
Pension Plans in the Iron and Steel Industry.....	16
Residential Stoker Industry Growing Outlet for Steel.....	18
Short Week Panacea Won't Cure Ills.....	20
Variable Blow Hammer Insures Flexibility in Forging.....	22
Late Returns from Laboratory and Mill.....	24
Light Weight Cellular Brick for Furnace Insulation.....	26
Mountain Pipe Line Constructed by Welding.....	29
New Equipment.....	30
News.....	37
Automotive Industry.....	40
Washington News.....	43
December Pig Iron Production.....	50
Markets.....	51
Construction and Equipment Buying.....	76
Products Advertised.....	120
Index to Advertisers.....	140

C. S. BAUR, General Advertising Manager
A. H. DIX, Manager, Reader Service

Member, Audit Bureau of Circulations

Member, Associated Business Papers

Published every Thursday. Subscription Price: United States and Possessions, Mexico, Cuba, \$6.00; Canada, \$8.50, including duty; Foreign \$12.00 a year. Single copy 25 Cents.

Cable Address, "Ironage, N. Y."

ADVERTISING STAFF

Emerson Findley, 311 Union Bldg., Cleveland
B. L. Herman, 675 Delaware Ave., Buffalo, N. Y.

H. K. Hottenstein, 802 Otis Bldg., Chicago
Peirce Lewis, 7316 Woodward Ave., Detroit
Charles Lundberg, Chilton Bldg., Chestnut & 56th Sts., Philadelphia, Pa.

C. H. Ober, 239 W. 39th St., New York
W. B. Robinson, 428 Park Bldg., Pittsburgh
W. C. Sweetser, 239 West 39th St., New York
D. C. Warren, P. O. Box 81, Hartford, Conn.



How to Buy for Distant Points—



Buy Locally — Ship from the Ryerson Plant Nearest Destination

Buyers who must purchase material for use at distant plants or jobs find it both economical as well as convenient to place their orders with our local plants.

The order is entered and relayed to the Ryerson Plant that is nearest the point of destination. This Ryerson Plant ships at once with the same speed and accuracy that characterizes our local deliveries.

In this way you may deal with a known source that is familiar with your specifications—a firm you can depend on and keep in touch with through the telephone on your desk.

This national service aids economical centralized buying.

Time is saved placing orders—errors are eliminated—money is saved thru saving in time and freight—time is again saved in actual delivery.

At every point of contact, Ryerson personal service is assured.

There is a separate Ryerson Stock List for each of the ten plants. We will be glad to furnish copies of the Plant books in which you may be interested. Address the nearest plant.

Joseph T. Ryerson & Son, Inc. Steel-service plants at Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

RYERSON NATIONAL STEEL SERVICE

▲▲▲ THE IRON AGE ▲▲▲

ESTABLISHED 1855

FEBRUARY 7, 1935

Vol. 135, No. 6

Thrift or Spendthrift

THE big family known as the United States has had its 80 billion dollar a year income cut in half since 1929. It has also increased its mortgage of debt from 17 billions to 26 billions.

When the income of an ordinary family is cut in half and its debts are increased some 50 or 60 per cent, the best remedy is the exercise of a high degree of thrift. Thrift is defined as "economical management." It means making the money that one has at his disposal go further and do better.

Strangely enough, this common sense way out for a family in such straits, the good management way of disciplining the pennies, is forgotten nowadays when our rulers think in terms of public spending.

One of the "show places" of the New Deal has been the check writing department of the A.A.A. Uncle Sam's money could not be spent fast enough through writing checks in the old fashioned way, so a marvelous array of check writing and bookkeeping and tabulating machines was installed for the purpose of speeding the flow of money to the farmers for not raising crops.

This is but one instance of the enormous "subtracting machine" which Washington has put together during the past two years for the purpose of spending us out of our difficulties. And in very large measure, this machine is being run by men who have had scant experience in creating wealth or earned income but whose chief expertness lies in their ability to generate outgo.

Eventually, though payment may be deferred, industry, which is still wedded to the old fashioned idea of thrift, must inevitably foot most of the bill for the operation of our national subtracting machine. It must set up an income adding machine which will work faster than does this income subtracting machine.

How can this be done in the face of the urge toward less work, shorter hours and the removal of the incentives toward individual effort which necessarily accompany the cushioning of the exigencies of life by a paternalistic government?

There is only one way to create new wealth on the scale that will be necessary. That way is to reequip our industries with more efficient machinery. An improved machine is the real symbol of thrift, for it makes the dollar of expenditure go further and do more. If we put enough of these income adding machines to work we may be able to balance the work of the national subtracting machine.

John W. Lawrence

Improved Method for Determining The Corrosion Resistance of Cr And Cr-Ni Steels

By C. MORRIS JOHNSON

*Chief Chemist, Crucible Steel
Company of America*

(3) to forecast the performance of metals under corrosive attack.

The tests were made in liter flasks fitted with return condensers connected by ground glass hollow stoppers. These stoppers were in-

terchangeable, i.e., they would fit any boiling flask. A photo of the original apparatus is shown in Fig. 1. In the following paragraphs the glass parts of the original Huey equipment and the improvements made by the writer will be described.

The boiling flask, Fig. 4, has a capacity of 1060 ml. to the base of the ground glass neck. This neck has an inside diameter of 5.9 cm., and is 5.4 cm. long. The entire flask is 19.7 cm. high and 12.8 cm. wide near the bottom bilge.

In order to maintain the strength of acid at 65 per cent by weight, the flasks are fitted with glass condensers shown in Fig. 5. The hollow glass stoppers (Fig. 2) of these condensers (6, in Fig. 5) are ground to accurately fit the flask shown in Fig. 2. These stoppers are interchangeable, i.e., will fit any boiling flask. These stoppers and necks fit well enough to secure a tight joint without twisting with any great force. The neck of the condenser at (A) in Fig. 5 is 2.4 cm. O.D. by 3 cm. long. The extension tube at the top of the

AT the Chicago convention of the American Society for Metals, in 1930, W. R. Huey presented a paper entitled "Corrosion Test for Research and Inspection of Alloys." He recommended the testing of chromium and chromium-nickel corrosion - resisting steels by prolonged boiling in concentrated nitric acid of 65 per cent acidity by weight. This test method, he stated, had been the result of extensive investigations conducted almost continuously since 1924 in the laboratories of the E. I. du Pont de Nemours Co., Inc.

Huey sponsored the method as fully meeting the requirements for (1) testing the reactions of metals to corrosion with a view to an improvement of the metals, (2) the development of better metals, and

THE applications of corrosion resisting steels are so varied that any accelerated laboratory test must be carefully interpreted. Of the available short-time procedures, the method initiated by Huey is probably the best, partly because the discrepancies due to oxygen concentration and stagnant liquid films are reduced to a minimum. The original Huey apparatus, however, has several drawbacks. Therefore this improved method is most timely, for new corrosion resisting steels are being developed daily, and it is of utmost importance that accurate predictions can quickly be made as to their life expectancy in various media.

condenser measures 1.7 cm. O.D. and 7.5 cm. long. The total overall length of the condenser, including the ground glass, hollow interchangeable stopper, is 73 cm.

On putting the original Huey apparatus (Fig. 1) into service, the little glass hooks on the inside of the stopper (shown in Fig. 2) soon began to jump off. As the specimens are supported by glass rods from these hooks, the breaking of the hooks rendered the condenser unserviceable.

On withdrawing the stopper, it also has a tendency to stick in the ground glass neck after a 48-hr. run. The comparatively heavy pieces of steel (Fig. 2) are in decided danger of dropping off the hooks when the stopper is removed. Thus there is a possibility of the specimens falling into the boiling flask and breaking it, thereby releasing 800 ml. of hot concentrated nitric acid. The powerful acid would violently attack the steel top of the electric heater, thereby endangering the operators.

It was decided to abandon the hook supports and suspend the test pieces with glass rod swings. These swings can be easily bent from 3 mm. diameter rods to support sheet samples, and from 4 mm. rods for heavy tests such as bar samples. These swings are shown in Figs. 3 and 4. These rods merely lean up against the walls of the boiling flask. Where the test samples are small, as many as six disks can be suspended in one boiling flask. None of the samples touch each other or the side wall of the boiling flask.

The use of these swings does away with the inner hooks in a satisfactory manner. Consequently much time is saved, as usually the hooks drop off as fast as they are used. Also, it has been found that there is no longer any need for the larger glass hooks on the outside of the ground glass neck of the flasks, as shown in Figs. 3 and 4.

Standard Apparatus Used

The method of clamping and supporting the rather long and heavy condensers shown in Fig. 5 removes any need of the outside glass hooks on the boiling flasks. Ordinary large ring stands are used, and the asbestos-covered jaws of the extension clamp grip the condenser firmly in place, taking

its weight off the boiling flask. Such an arrangement gives flexibility and is made entirely from standard parts obtainable from dealers in chemical apparatus. Three boiling flasks can be accommodated in one Rezistal pan, if necessary. In Fig. 5 there are two flasks in each pan, although there is plenty of space for a third one.

Fig. 5 illustrates four flasks operating at the same time. The cooling water enters at (1), passes through all condensers, and leaves at (2) to the sink.

To catch any possible spills of large quantities of the boiling, concentrated nitric acid, the flasks rest in Rezistal pans. This metal is not appreciably attacked by the hot acid. The pan dimensions are 30.5 cm. inside diameter, 7 cm. deep, and 33 cm. across the top. Complete protection is thus provided for the operator and the steel top of the electric hot plate.

Asbestos wool is placed loosely in the Rezistal pan around the flasks in order to hasten boiling. See (3) in Fig. 5. The electric hot plate can be regulated to give

high, medium or low temperature.

An electric heater should be used for this work wherever possible, as it gives a uniform temperature over a long period of time with no necessity for adjustment. All the operator needs to watch is that the acid is boiling slowly, that the condenser tubes feel cool to the hand, and that the tap water is passing through them at a moderate speed.

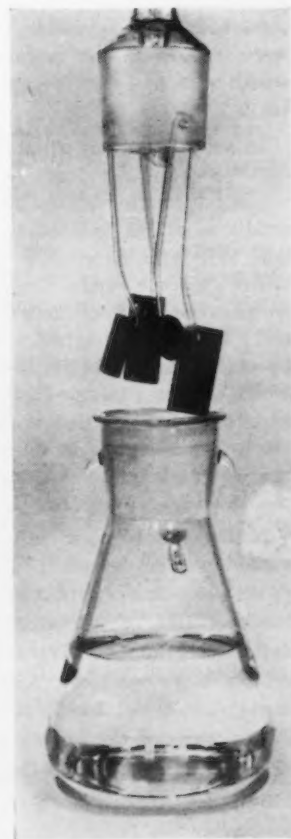
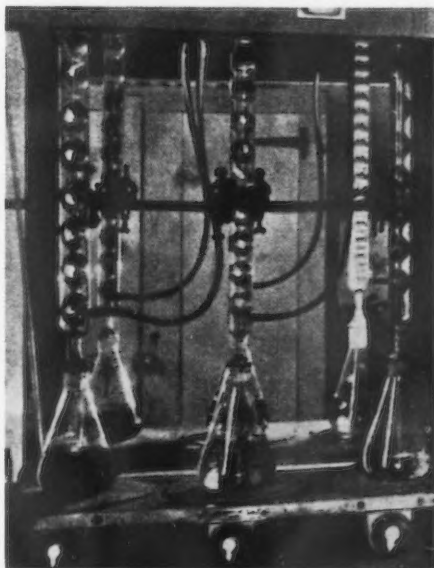
When the steel specimens and the acid are in the flask, the ground glass stopper of the condenser is set in the neck of the flask. This should be done carefully and firmly, and the stopper should not be twisted too tightly. If twisted tightly the operator may find trouble in disconnecting the condenser at the end of the run. When the test period is over, the condenser is disconnected at once from the flask to prevent sticking, which is much worse when the apparatus gets cold.

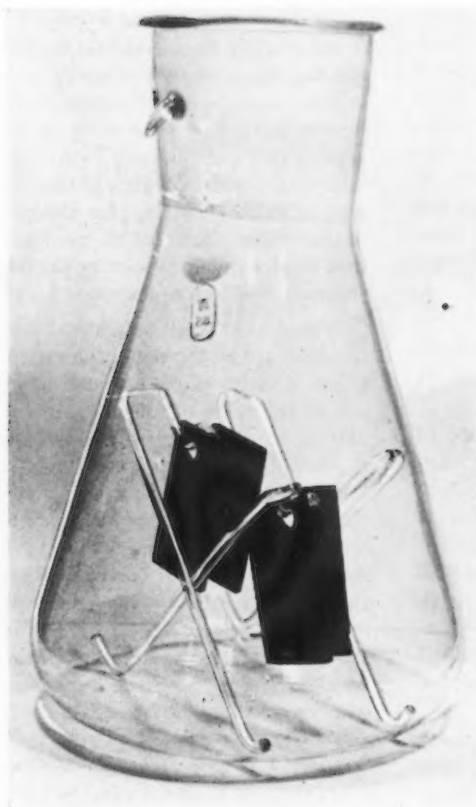
Preparation of the Specimens

Huey used a metal sample 1.875 x 0.875 x 0.375 in., with an 0.25-in. diameter hole in the center of one

FIG. 1—The original Huey apparatus (below) for rapidly testing the corrosion resistance of chromium and chromium-nickel alloys. The data obtained are used to forecast the performance of these alloys in service.

FIG. 2—Lower part of the glass condenser of the Huey apparatus. The glass hooks supporting the specimens often break thereby releasing the samples which in turn fracture the acid-filled beaker. In the improved Johnson equipment, the hooks are abandoned in favor of glass rod swings, as shown in Figs. 3 and 4.



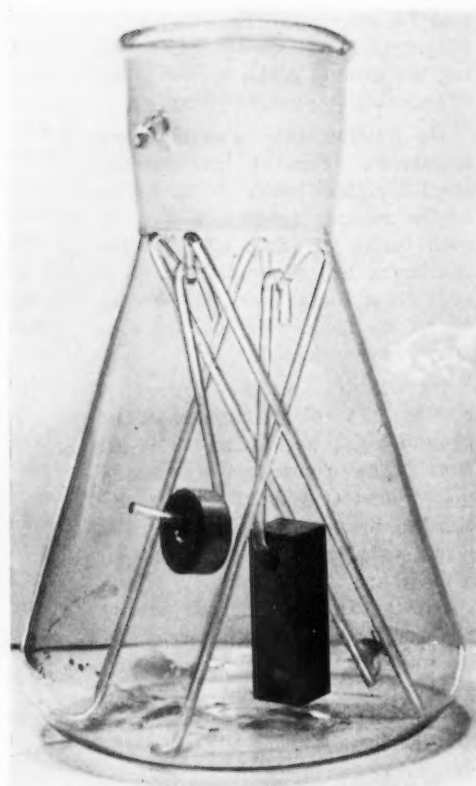


AT LEFT

FIG. 3—Method of supporting sheet samples in the Johnson apparatus. The samples do not touch each other or the flask wall.

AT RIGHT

FIG. 4—Method of supporting heavy bar samples. The glass rod swings rest against the walls of the boiling flask, and the samples hang freely with only one point of contact with glass.



end about 0.25 in. from the edge. He also recommended 1-in. diameter disks for round specimens. Huey finished the machined surface with 120 French emery, and avoided heating the surface by excessive friction. Visible scratches were removed, but a mirror-like polish was not regarded as necessary.

In actual practice all sorts of dimensions and surfaces are submitted, depending on the shape and condition of the finished mill product. The specific gravity is determined in the usual manner by weighing the steel accurately in air. Then it is weighed, suspended by a silk thread, in distilled water which is cooled to as near 4 deg. C. as possible. The difference between these two weights is divided into the weight in air. The quotient is the specific gravity.

Steels differing in composition should not be tested in the same flask, as electrical action may speed the corrosion of one kind of steel and at the same time retard action on the other samples. Also, specimens should not touch each other or the walls of the boiling flask.

Samples must be weighed in a clean, dry condition, both before and after the boiling in acid.

After the corrosion test, the samples are rinsed in hot tap water and the surfaces are rubbed with the hand until all sludge is removed. Then the sample is rinsed with distilled water and dried at once at 100 deg. C. It is cooled to room temperature in a dessicator and then weighed again. The loss of weight so found is recorded as parts of a gram. If the specifications require a second 48-hr. boil, then fresh acid is put in the boiling flask and the specimens are put through again as in the first instance, and weighed as before.

The average loss for two 48-hr. boiling periods is inserted in the Huey formula, which is:

$$R = \frac{43.9 W}{A S T}$$

W = loss of weight in parts of a gram for the boiling period.

A = square inches of exposed surface of the steel.

S = specific gravity of the steel.

T = total boiling time in hours.

43.9 = factor for converting cubic units to linear measure and hours to months.

R = inches penetration per month; this is the desired result.

The area of a circular disk includes the two faces and the cylindrical edge. The area of the two

faces is gotten by multiplying the square of the radius by 3.1416 and then by two. The area of the edge is obtained by multiplying the thickness of the edge by the diameter of the disk, and then multiplying the result by 3.1416. The area of edge is added to that of the two faces to get the total area. It is customary in some testing, at least, to ignore the area of the $\frac{1}{4}$ -in. hole, which is really deductible from the total area. The cutting of the hole exposes some additional surface, so that the total area would be less by two circles $\frac{1}{4}$ in. in diameter and increased by the area of a cylindrical hole $\frac{1}{4}$ -in. diameter by the thickness of the disk.

For sheets and rectangular specimens, the area is obtained by multiplying the width of each face, edge, and end by the length of each. Add all and multiply the total area by two, as there are two of each.

Simplified Formula is Used

For work where the tests are on a number of steels of practically the same specific gravity, the writer has deduced a time-saving formula. It is:

$$(1) \quad P = \frac{L}{16387.06 \times S}$$

P = inches penetration for each test period.

L = Loss in milligrams per sq. in. per test period, i.e., 1 milligram loss is a whole number, or 1.0 in the formula. A loss of 2.5 milligrams per sq. in. is inserted for L as 2.5, and so on.

If the total loss in milligrams per sq. in. be that obtained by running one 48-hr. test, then the inches penetration per month will be:

$$(2) \quad 15 P \text{ or } \frac{L}{16387.06 \times S} \times 15,$$

or inches penetration per month.

Usually two 48-hr. tests are run and the average of the two losses is inserted in formula (2) for L. One milligram loss per sq. in. having the value of a whole number. Formulas (1) and (2) are deduced as follows:

P = inches penetration per test period.

L = loss in milligrams per sq. in. per test period; one milligram being a whole number in the formula.

S = specific gravity of the specimen.

Y = penetration in millimeters per test period.

The formula is derived in the following manner:

square inch = 25.4×25.4 sq. millimeters. Hence $25.4 \times 25.4 \times S \times Y = L$ (assuming that 1 sq. in. of surface is exposed). Therefore

$$6451.6 \times S \times Y = L$$

$$\text{or } Y = \frac{L}{6451.6 \times S}$$

Since $Y \div 25.4 = \text{inches}$; Therefore,

$$\frac{Y}{25.4} = \frac{L}{6451.6 \times 25.4 \times S} = P$$

Performing the calculations indicated in the above equation, the following equation is secured:

$$(1) \quad \frac{Y}{25.4} = \frac{L}{16387.06 \times S} = P$$

The formulas can be further simplified for 16 per cent chromium and 18-8 steels. In 16 to 18 per

cent chromium steels, 7.73 should be substituted for S, thereby obtaining

$$\frac{L}{16387.06 \times 7.73} = P = \frac{L}{126672}$$

Then if the test period is 48 hr.,

$$P \times 15 = \frac{L \times 15}{126672} = \text{Inches penetration per month of 30 days.}$$

1. Dividing 126672 by 15 will eliminate this 15 factor, and then

$$(3) \quad P \times 15 \text{ is reduced to } \frac{L}{8444.8}$$

In like manner, for 18-8 steels, substitute 7.9 for S. Then

$$P = \frac{L}{16387.06 \times 7.9} = \frac{L}{129457.7}$$

With 48-hr. test periods,

$$(4) \quad P \times 15 = \frac{L \times 15}{129457.7} = \frac{L}{8630.5}$$

inches penetration per month.

These quite simple formulas (3) and (4), of course, reduce calculation labors. In like manner, formulas can be derived for any type of testing from the parent formula

$$(1) \text{ or } P = \frac{L}{16387.06 \times S}$$

Obviously formula (1) holds good for any metal in any corrosive solution that does not appreciably attack the glass.

Application of the Formulas

Consider the case of 18 per cent chromium steel; the data are quantitative.

Total loss for 48 hr. = 0.0638 gm. Exposed area (sum of areas of two faces, edges, and ends) = 2.93 sq. in.

Loss in milligrams per sq. in. = $(63.8 \div 2.93 = 21.77) = 21.77$

Specific gravity = 7.73

Substituting in the Huey formula:

$$R = \frac{43.9 W}{AST} = \frac{43.9 \times 0.0638}{2.93 \times 7.73 \times 48} = 0.00258 \text{ in.}$$

Substituting in the writer's formula for this grade:

$$P \times 15 = \frac{L}{8445} = \frac{21.77}{8445} = 0.00258 \text{ in.}$$

With the following data for 18-8 steel, the solution would be:

(CONCLUDED ON PAGE 84)

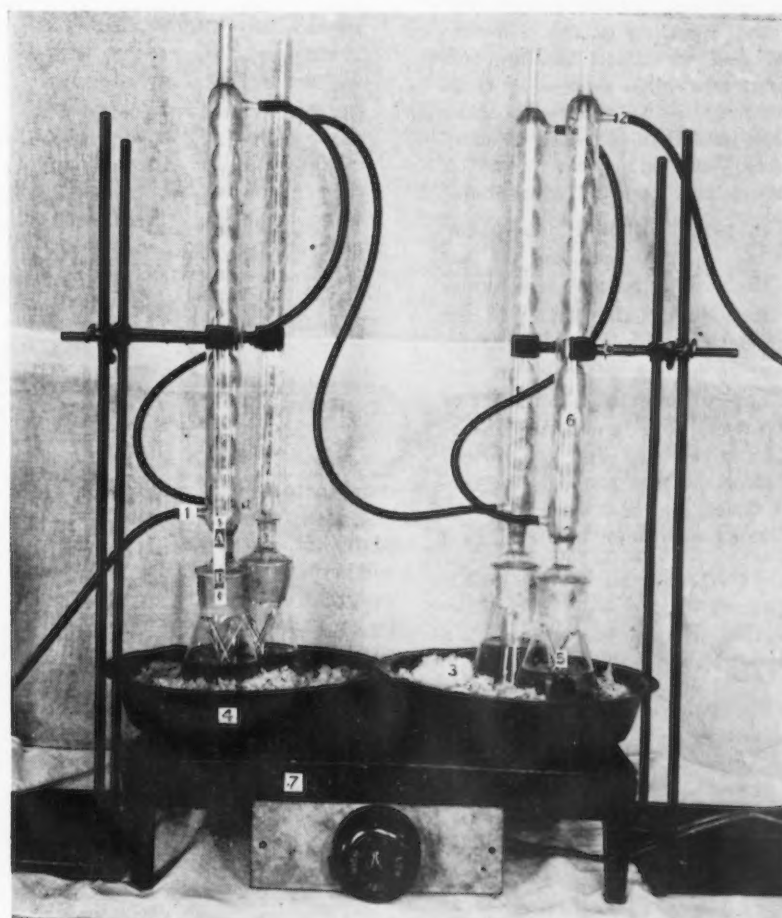


FIG. 5—The improved Huey testing equipment as devised by C. Morris Johnson. These four flasks are operating at the same time.

TO my knowledge there are in the neighborhood of 50 pension plans in the various branches of the iron and steel industry. That would comprise iron and steel production, fabrication and related machine tool and machinery lines, and henceforth it is in this broad sense that the term "iron and steel" industry is employed.

These pension plans have developed from no preconceived, agreed upon program. They are the individual manufacturer's answer to what he believes might be done practically, to take care of the employee who grows old in his service. While there are certain marks of imitation, usually of the plan of a leader in the industry, the respective separate, important provisions show the greatest possible range of treatment. In fact, scarcely two plans are exactly alike in some important element. For example, at what ages shall employees of both sexes be retired, after how many years of service, and shall such retirement be compulsory, voluntary or discretionary, and at what age or service levels? If there are 50 pension plans, we will find 50 different and ingenious answers to this question.

Plans Developed Empirically

The development of pension plans in the iron and steel industry has proceeded empirically, by a trial and error process. But the time has come to take stock and to evaluate what has been done. It may be possible for the industry in its component branches to decide upon some more uniform basis, from which pensions, in the light of accumulated experience, may henceforth proceed. Nor do I believe it is wise to wait upon the passage of State or Federal legislation, which is unlikely to afford an equitable or complete answer to

the pension requirements of the iron and steel industry.

The preliminary step, which is at least desirable, is the collection of all available information of existing pension systems in the iron and steel industry, the analysis and digesting of this information, and the discussion and exchange of opinion thereon by those executives in the industry under whose jurisdictions pensions come. Certain tentative standards of practice may thus be suggested.

The point I should like to emphasize is that pensions are not the concern of isolated companies no more than is the matter of the depreciation of plant and equipment. In human depreciation, we, too, have an inescapable element of cost, which our operating sheets must provide for and our prices for steel and iron products include. The times may not be propitious for many additional iron and steel

Pension Plans in the Iron

MAYBE you have a pension plan in your business, designed to take care of superannuated employees. Perhaps it is still in the period of infancy, so to speak, and therefore well within the bounds of supportability. But pension plans of this sort have a way of growing up, especially in the companies where labor turnover is low. And when pension plans grow up, or rather the pensioners do, watch out for the growth of cost of operation.

manufacturers to assume the burden of a fully contractual pension plan, but, as far as possible, the competitive advantage of the less progressive manufacturer should be equalized.

Some Pertinent Questions

In a short article of this nature, it is possible to indicate only some of the pension matters which should be probed by the industry as a whole:

- 1—The underlying social, economic and operating factors that make pensions a matter of practical importance.
- 2—Who shall bear the cost of the pensions, the employer alone, or shall the worker contribute? I shall later refer to this matter in more detail.
- 3—What ages for retirement shall





and Steel Industry

By ARTHUR LAZARUS

Industrial pension plans, as conceived by enlightened managers of private enterprise, will not be superseded by any Government pension plan. The latter, no matter how it may be camouflaged, is really nothing but a more economical and efficient way to community solution of the almshouse problem. Private pension plans will continue; but they should have industry breadth and uniformity and not penalize, competitively, the public-spirited employer.

be invoked, and how many years of service shall entitle to full pension benefits?

4—What pension benefits shall be paid? Shall maximum and minimum amounts be set, shall anything accrue to the pensioner's dependents upon his decease? What provision shall be made for past service?

5—Shall the plan be re-insured, carried by a company, or shall there be an industry-wide pension fund? Shall funds be set aside or reserves merely created?

These are but a sampling of pension matters which should forcedly include consideration of proposed governmental legislation upon which the combined judgment of the industry will be helpful. There are, of course, many precedents for the type of study I am

suggesting. It is nothing new or strange to the iron and steel industry.

I should like to refer in greater detail to the matter of employee participation. In number, about 85 per cent of the pension systems in the iron and steel industry are non-contributory, that is the employer bears the full cost. The percentage is much higher from the viewpoint of the pension benefits paid. In fact, I know only of three pension plans of any consequence in the iron and steel industry that are contributory. Now that situation, I believe, is fundamentally wrong.

It may work out well for a number of years. Here, for example, are some statistics of the pension experience of the Bethlehem Steel Co., drawn from the eleventh annual report of the operations of the plan, which shows that the cost is still very modest. The total amount of money paid to pensioners during 1933 was \$814,567, representing 1.73 per cent of the payroll. The average monthly pension for the 184 pensions granted during 1933 amounts to \$35.16. The average period of service for the 184 employees was 34.47 years. Their average age was 66.51 years. The average duration of pension payments for the 116 terminated pensions of the year was 5.51 years. The shortest duration of pension payments was 0.17 of a year and the longest duration was 16.83 years. Since 1923 the average duration of pension payments

for the 1120 terminated pensions was 5.15 years. Here is a plan whose present cost is clearly supportable, but the plan is only 11 years old, and pension plans have the deceptive quality of costing very little in the early years of their operation.

The U. S. Steel Pension Plan

Let us look at an older plan, that of the United States Steel Corp., established in 1911. The information presented is drawn from the excellent annual reports of this company.

Let us consider first the average monthly pension payment. This runs as follows for employees retired during the years 1927 to 1933 inclusive:

1927	\$51.45
1928	53.55
1929	55.15
1930	55.70
1931	62.15
1932	69.45
1933	57.85

In 1931, minimum and maximum pension allowances were eliminated. Effective April 1, 1933, pension rates were reduced for all pensioners, except those receiving \$35 and less per month. The reductions ranged from 5 per cent in the case of those receiving monthly pensions from \$35.01 to \$40 per month, up to a maximum of 25 per cent in the case of pensioners in the highest group.

Suppose we now consider the number of employees on the pension roll in comparison with the

(CONTINUED ON PAGE 84)

Residential Stoker Industry Is Growing

MECHANICAL refrigeration, the washing machine and other electrical appliances designed to make housekeeping easier, have done much to provide comfort in the home, and more recently air conditioning, having the same purpose, has made considerable headway. Another line of activity in the home equipment field that also has the object of increasing home comforts and conveniences, an activity that perhaps is less conspicuous and less spectacular than some others in this field, has made rapid progress in the past two or three years. That is the

manufacture of automatically controlled coal stokers for the home. This is an industry that is creating an increasing demand for iron and steel, as well as for motors, blowers, electric control and other equipment.

While the quantity of metal required in the manufacture of a small stoker adaptable for a home varies according to the make and design, it is stated that an average of from 700 to 800 lb. of metal is used in a residential type stoker. Of this, 100 to 150 lb. is rolled steel and the remainder is in cast parts. A mechanical house stoker of the

usual under-feed type consists of a hopper, a feed tube, a conveyor or spiral feed worm and a retort in the heating unit into which the conveyor delivers the fuel from the hopper. Set on top of the retort is a tuyere in which there are ports through which air for combustion is supplied to the fuel bed. A fuel agitator in the hopper is driven by the feed worm.

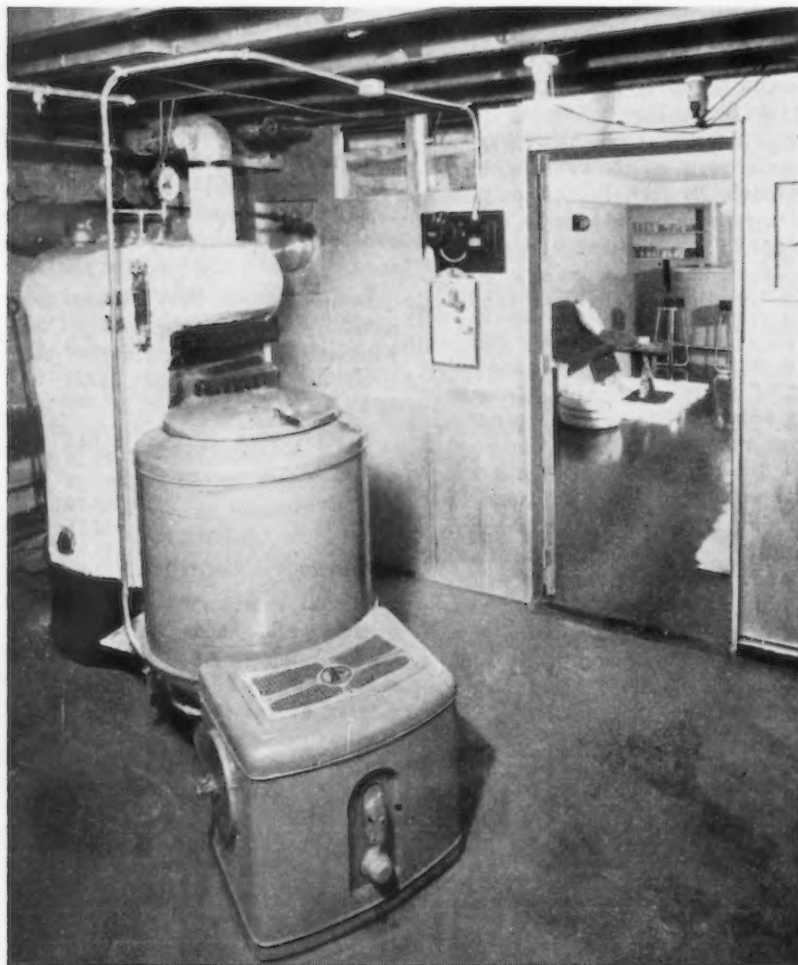
The stoker is driven through gears located in a gear housing. A $\frac{1}{4}$ to $\frac{1}{3}$ -hp. motor drives the feeding mechanism and also a 10-in. fan, which supplies air for combustion. Automatic control equipment includes a thermostat and relay and limit switches.

Hoppers and hopper bases of one leading type of stoker are made of copper-bearing sheet steel of 11 to 16-gage of welded construction. Steel stampings are also used for some other parts. The conveyor screw and spider-type agitator are nickel alloy steel castings, this material being used because of its corrosion and heat-resisting qualities. The retort and tuyeres are cast iron. Gears are bronze.

Steady Increase in Stoker Sales

The American home provides a very large potential market for the small stoker. During the depression sales of stokers for residence purposes showed a steady increase in volume, and manufacturing facilities were enlarged. Sales of domestic stokers in 1934 broke all records. At present about 50,000 homes in the anthracite and bituminous coal-consuming territories are equipped with mechanical household stokers, and, with about 25,000,000 one and two-family dwellings in this country, manufacturers claim the market has barely been touched.

Improvements and refinements in stokers are being made frequently and this helps to increase sales. During 1934 there were approximately 30,000 stokers installed, of which 80 per cent, or



TYPICAL household stoker installation with a hot water heating boiler.

Outlet for Iron and Steel

BY F. L. PRENTISS

*Cleveland Resident Editor,
The Iron Age*



A "STREAMLINED" household-type stoker.

24,000, were the small household size with a capacity of 100 lb. of coal per hr. or less. Not all of these went into homes, as small stokers are used in bakeries, greenhouses and for other small heating plants. The common range of capacity for home stokers is 20 to 60 lb. of coal per hr.

All types of house-heating equipment have been made more efficient the past few years by improvements and refinements, and

the stoker industry seems to have kept pace with the improvement in heating units. Automatic heat has become a favorite expression with makers of heating equipment when pointing out the advantages of their products, this being true whether the equipment is designed to burn gas, oil or solid fuels. Competition among coal, gas and oil as fuels for the home probably is keener at present than ever before, and this competition evidently

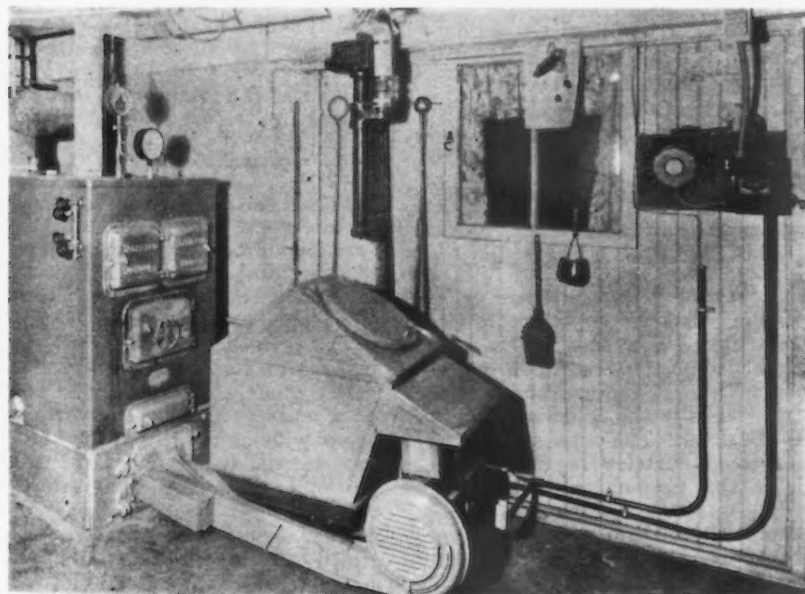
is equally as sharp among manufacturers of equipment for burning the different types of fuels.

Domestic coke produced by the iron and steel companies in their by-product plants has become a vigorous competitor of other fuels for house-heating purposes, and incidentally it might be mentioned that a very recent development in the stoker industry which will prove an aid in disposing of by-product domestic coke is the bringing out by a Chicago company of a line of stokers for mechanically serving house-heating plants and other heating units that use coke as fuel.

Envision Sale of 100,000 Stokers a Year

Stoker manufacturers feel that in view of the advantages offered by the use of mechanical stokers as compared with hand firing methods and the very small percentage of coal and coke-heated homes now equipped with stokers, sales of domestic stokers within the next five or six years will reach 100,000 units annually, most of which will go into homes and small apartments. In the manufacture of that number, 35,000 to 40,000 tons of iron and steel would be used.

Some of the later models of domestic stokers are of the bin feed type, which obviates the necessity
(CONCLUDED ON PAGE 88)



ANOTHER design of stoker "hooked up to the boiler."

Blanket Short Week Panacea Wont

o o o

SO much has been talked and written about technological unemployment that it seems there is room for yet one more factual statement which will clear up some of the misapprehensions which exist in both the lay and professional mind. The currently prevailing thought that the adoption of the machine has created a labor-consuming Frankenstein, which is responsible for the acknowledged unbalance in our economic system, requires refutation, otherwise there is a danger that ill-considered action will be engendered, designed to destroy that which we value most highly, i. e., the American standard of living.

Diagram 1, based on the Census returns, clearly indicates the trends of the last 25 years, and a close examination of the figures brings out some interesting facts.

From the years 1910 to 1930, inclusive, the amount of labor employed in the production of farm produce has decreased despite the fact that there has been a material increase in population and a proportionate growth in the number of farm products produced. Without doubt this shrinkage in employment is due in part to an increased efficiency of production brought about in many ways by the increased use of farm machinery.

On the right hand side of the chart recording the growth of industrial activity, it will be noted that the number of people gainfully employed in the producing industries has increased during the same period from 12,000,000 to 15,000,000. The net results of the two activities, i. e., farming and industry, being a loss of labor absorption in respect to farming of

2,000,000 people, and a gain in industry of 3,000,000.

It should be noted, however, that both activities have the common characteristic of having greatly expanded the quantity in units and total value of their products; in fact, this expansion value in units produced has been at a much more greatly accelerated rate than would be indicated by the normal growth in population.

It is a commonly known and recognized fact that during the period under review, the mechanization of industry has progressed at a much higher rate than has the mechanization of farming operations.

The most remarkable feature brought out by the diagram and

THE author is in favor of the establishment of a basic working week, but believes that a blanket basis, covering all industry, is not feasible. Some industries, which are in a strong competitive position, he states, could perhaps "get by" with a 20-hour week, where others, particularly those subjected to foreign competition, might require a week of 50 hours. This thesis is developed in the accompanying article.

accompanying figures, however, is the fact that the service industries have during the years 1910 to 1930 expanded the use of man power from 14 to 23 million, and this in turn leads to the following logical conclusions: The expansion of the service industries is in keeping with the phenomenal growth in what we term the United States standard of living, these services being bought with some of the profits accruing from profitable farm and industrial operations. Here again the question regarding the influence of mechanization is

raised, and the natural corollary is, that mechanization, by reducing the unit cost of service, has contributed its quota to the expansion and made it possible for 9,000,000 extra people to earn their living at occupations coming within this category during the 20 years intervening between 1910 and 1930.

Factors Influencing Profitable Operation

Having regard to the fact that farming and productive industrial operations are the basic profit earning industries, it is well to give consideration to the elements which make it possible for these industries to earn a profit. The major element, of course, is the power of absorption existent in our vast domestic market, but also of major importance is our ability to secure a reasonable quota of foreign trade. The personnel of the service industries, i. e., that 23,000,000 of people gainfully employed and recorded in the center column, also constitute a great consuming entity. The service industries are what might be considered the equalizing buffer organization which makes available to all of us the benefits secured by the profitable operations of the two basic industries of farming and industry proper.

Foreign Markets

Reference to Diagram 2 clearly indicates what has happened in our foreign markets for farm and industrial products, and the natural question arises as to why these shrinkages have occurred.

The evidence grows that the prices which our manufacturers of goods other than those produced on a mass production basis, which are now being quoted, are too high to command the former large proportion of the foreign world market which we at one time enjoyed. Similar evidence is also available which indicates that the high prices do not represent an effort to extract an undue amount of profit out of the foreign market, but are rather brought about by high costs of

Cure Our Labor Ills

By R. E. W. HARRISON
Chairman, Machine Shop Practice
Division, American Society of
Mechanical Engineers

production. Naturally, the question arises as to why these costs of production should be so disproportionately high, and the answer indicated is that what might be termed our dollar manufacturing efficiency is low, due to high labor costs and disproportionately high overhead charges. However, no useful purpose at the moment would be served by debating this particular phase of the matter at length other than to point out that if we are to regain our foreign markets we must do so on a price, as well as a quality basis, and the concession in price should be contributed to by the elements of overhead and labor. Our principal competitors in the world market work much longer hours than we do for considerably lower rates of pay, hence we must make up the cost deficiency by increased manufacturing efficiency, and it logically follows that when the overhead element has been reduced as far as possible the next contribution must be made in the number of hours worked per day.

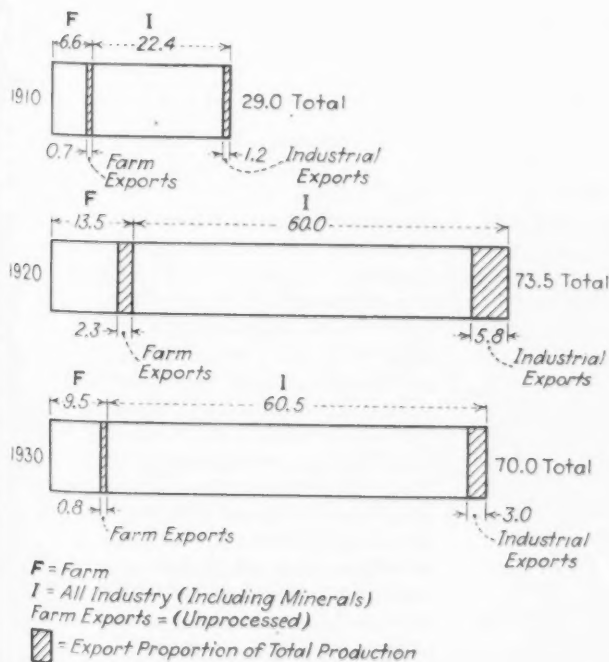
The problem we are confronted with is the regaining of foreign business in what might be termed the capital goods industries, and the issue is plain that this cannot be accomplished when we quote prices which are too high to command the prospective business. Our foreign customers past, actual, and potential, are not in the slightest way interested in the maintenance of a high standard of living in the United States. Hence, lacking subsidies and such other artificial stimulants for our foreign business in capital goods, the only way available in which we can re-enter the market is on a reduced cost basis, and all elements in the costs should contribute their quota, by the acceptance of a reduced profit on investment, by increasing the number of hours worked, and by a reduction in sales costs which could probably be most efficiently accomplished by our domestic manufacturers taking advantage of the provisions of the Webb-Pomerene Act, which permits them to combine in

price agreement for the exploration of any and all foreign markets.

Domestic Market Conditions

Of far greater importance in the scheme of things, however, is the restoration of our vast domestic market which at practically all times represents 90 per cent of our total business. Another fact in respect to the domestic market which we should not lose sight of is that our increasing productive efficiency due to mechanized manufacture is continually forcing a greater proportion of the total working population into the service industries. However, this should not in any way be a cause for alarm, as it is an extremely healthy trend and corresponds in its characteristics entirely with the growth in quality of the American standard of living. On the whole the citizens of this country enjoy a greater measure of buyable services than the residents of any other country in the world, and it

(CONTINUED ON PAGE 73)



	Farm	Service	Industry	Total Gainfully Employed
1910	12.5	14.0	11.5	38.0
1920	10.5	17.0	14.0	41.5
1930	10.5	23.0	15.5	49.0

AT LEFT

TOTAL production of the United States in billions of dollars—agricultural, mineral and industrial.

ABOVE

DISTRIBUTION of labor, millions of workers.

New Variable-Blow Hammer Insures Flexibility In Forging Operations

By F. J. VLCHEK

President, The Vlcek Tool Co.

o o o

THERE are many forging jobs requiring considerable pre-forging to get the stock into proper shape for easy filling out of impressions, for which long usage has dictated the steam hammer because of its flexibility as compared with the automatic board drop hammer. As an example, connecting rods are usually forged of comparatively heavy billets, necessitating the drawing out of the center of the billet for the small section of the rod, leaving the ends heavier. This is accomplished with a succession of rather light, rapid blows, moving the stock as rapidly as possible and finishing with the heaviest blows to bring the forging to size and fill out the impression.

This flexibility is lacking in the conventional board drop hammer in which the speed and force of the blow are fixed, and the forger has his choice of a complicated die to obtain the right amount of pre-forging, or of wasting stock by hammering a poorly pre-forged billet into the finishing impression. If the latter, the forging may be next to impossible to produce, due

to thin sections cooling before the forging is reduced to size. In any event the wear on dies is obvious when excess material must be forced out through a thin flash. If pre-forging is properly carried

NOT satisfied with the efficiency of the conventional steam and board drop hammers for certain classes of work in a forge shop, F. J. Vlcek, president, Vlcek Tool Co., Cleveland, proceeded to develop a hammer along his own ideas. He visioned the need of and has perfected a board drop hammer with a variable blow—one that will deliver light rapid blows or long heavy blows, the change in blow being made instantly by the operator with a foot treadle. Mr. Vlcek's design is embodied in a small working model hammer that is being operated for demonstration purposes in the Vlcek plant.

out, using a hammer possessing the required flexibility, that is, one able to deliver at the will of the operator either a succession of light, rapid blows, or of heavy, solid blows, the speed of production is greatly improved and wear on dies and equipment is tremendously decreased.

Drop Hammer Has Limitations

Unfortunately this has, in the past, been possible only with the steam hammer, which, it must be allowed, is wonderfully flexible. There has seemed to the writer, however, a field in which forgers have suffered because of shortcomings in their equipment. I have in mind those drop hammer shops in which jobs, such as described above, come up with fair regularity, yet in which the expense of installing or maintaining a steam plant is either objectionable or prohibitive. Such a situation calls for a multiplicity of equipment; halve-hammers and drop hammers, sometimes upsetters, in combination for the proper sequence of pre-forging and finishing. The waste of tying up a number of

machines on a single forging, and of either maintaining a crew for full utilization of the assembly of machines, or on the other hand of suffering only one machine at a time to be in production, is obvious.

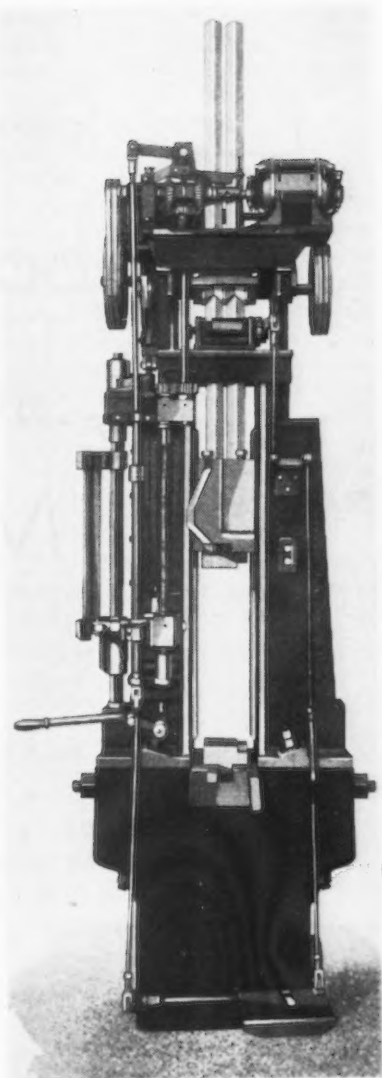
Again, there are many jobs which are on the border line between requiring a steam hammer or a board drop hammer, which the forger turns over to the steam hammer because of its extra flexibility, but on which he regrets his inability to use the more economical board hammer.

It is for this field of work which the writer visions the variable blow hammer. In this development, the economy of the board hammer, requiring no steam plant, is fully retained. At the same time the flexibility of the steam hammer is retained.

Roll Release Is Under Pedal Control

Considerable similarity exists between the action of the variable-blow hammer that I have developed and the present automatic board drop hammer. The bottom knock-off and top roll release are retained, with the essential difference that the position of the roll release is movable at the will of the operator and by merely increasing or releasing the pressure of his foot on a stroke-regulating pedal. This pedal is located in the center of the customary treadle, so that the same movement which starts the hammer places the operator's foot in position to operate the stroke-regulating pedal.

The layout of the stroke-regulating mechanism is extremely simple: the roll release is mounted in a carrier, which is guided vertically in one of the uprights. The position of the roll-release carrier, and, therefore, the length of stroke, is controlled by means of a heavy screw, which is driven from one of the overhead shafts or may be driven independently. In the hammer illustrated, the drive is through a reversing clutch, which is actuated by the stroke regulating pedal. The carrier is limited at either top or bottom position by means of travel limiting dogs, which automatically and positively disengage the screw driving mechanism, even against the continued pressure of the operator's foot. Releasing slightly the foot pressure on the stroke-regulating pedal stops the action of the mechanism,



NEW variable-blow hammer that will deliver light rapid blows or long heavy blows, the change in blow being made instantly by the operator with a foot treadle.

and the carrier is held fixed in position.

From the above condensed description it will be evident that the operator has at his instant disposal a flexibility of operation ranging from the longest drop of which the hammer will permit to the shortest blow which will engage the knock-off. This is obtained, not by a choice between a high and low drop, but by steps as small or large as desired between blows. The height of drop may be changed continuously in either direction while forging.

While the mechanism might have been built into a hammer with the conventional friction bar, this did not seem advisable, for reasons given above. It was desired to eliminate as far as pos-

sible the impact at knock-off and roll release, and also to compensate on both clamping and engaging the rolls for the unavoidable greater board wear near the pick-up spot on the boards, due to the use of shorter strokes during part of the operation.

For these reasons, a toggle-like connection was made between the eccentrics thus causing both rolls to move toward or away from the boards simultaneously. In addition, instead of the suspended friction bar, a toggle-operating cam is employed, which engages the eccentrics with greatly reduced impact. Finally, the toggle-operating cam is mounted on a vertical shaft, to which are fastened wing-like cams receiving motion from horizontal pushers, one for roll release and one for roll engagement. These have been referred to as roll release and bottom knock-off. The latter term is certainly not descriptive of the action, as the impact, strain and vibration of the friction bar when engaged by the knock-off in the conventional hammer are absent; in their place is a much smoother movement.

Foundrymen to Meet With Engineers

THE Chicago section of the American Foundrymen's Association, the Western Society of Engineers and the Chicago section of the American Society of Mechanical Engineers are sponsoring a joint meeting on "Engineering Uses of Modern Cast Metals," to be held March 18, in the auditorium of the Engineering Building, 205 West Wacker Drive, Chicago.

Advances in gray iron will be discussed by H. Bornstein, chief chemist and metallurgist, Deere & Co., Moline, Ill. Progress in malleable iron will be considered by D. P. Forbes, president and general manager, Gunito Foundries Corp., Rockford, Ill., and developments in the cast steel field will be outlined by A. N. Connarroe, metallurgist, National Malleable & Steel Castings Co., Melrose Park, Ill.

An exhibit showing the developments in foundry technique, physical properties and special applications of cast ferrous metals of special interest to designing engineers will be held in conjunction with the meeting.

Late Returns from Laboratory and Mill

Dust Injection in Blast Furnace Reduces Ore Costs

DURING the operation of a blast furnace a great quantity of valuable flue dust comes through the downcomer. This dust is separated in a dust catcher and prepared for recharging into the furnace. The usual procedure is to briquet or sinter the dust in a special preparation plant, after which it is returned to the ore bunker, ultimately to be charged again in the furnace top. Like the ore, a part of this prepared dust will again be blown out of the top of the furnace as dust. Thus the process goes on, and it is of great economical importance that more efficient methods be developed to utilize this dust.

One good process of throat-dust injection was developed by Heskamp and described in *Stahl und Eisen* in 1931. In a recent issue of the same magazine, Otto Wehrheim presented detailed data concerning throat-dust injection into two furnaces belonging to the Koninklijke Nederlandsche Hoogovens en Staalfabrieken at Ymuiden, Holland.

Fig. 1 shows a detailed set-up of this installation. Flue dust is transferred from the collectors by a power screw through a sieve and then into a pressure container. It is then blown back into the furnace. The injection nozzles should be placed as far above the tuyere level as possible. Thus the injected dust has a maximum distance to travel down to the tuyere level, but is in a zone where the dust may be picked up by already softened particles of the burden. If the process is carried out with due

care, no disturbance of the operation of the furnace nor off-grade iron and slag need be feared. Also, the process permits extensive and

rapid regulation of the furnace operation, simply by increasing or decreasing the amount of dust injected.

BY T. W. LIPPERT

The Iron Age, New York

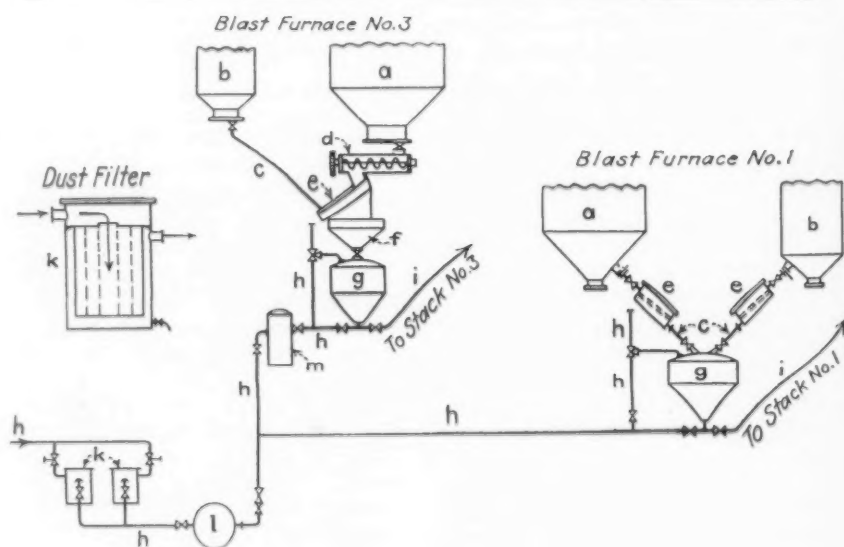


FIG. 1—A German arrangement for the injection of throat gas into blast furnaces. This process has been found to be very economical when applied to two furnaces at Ymuiden, Holland. a—Dust catcher; b—Secondary dust collector; c—Dust pipe; d—Spiral for pushing dust; e—Dust sieve; f—In-between container; g—Pressure feeding bell; h—Gas pipe; i—Blast pipe (dust and gas); k—Dust filter; l—Blower; m—Pressure equalizer.

Extensive studies of the Ymuiden stacks have shown that the cost of injecting the dust is consistently lower than the cost of briquetting or sintering. In experiments on stack No. 3, iron with a silicon content between 2½ and 3 per cent was made using throat dust injection part of the time and ordinary charging through the top during the remainder. It was found that production yields were raised 5 per cent or more when the dust was injected.

This procedure is about the simplest and cheapest means of restoring blast furnace dust to the stack as fully equivalent to ore. The circuit is entirely closed and practically automatic and fool-proof. Considerable experimentation has shown the process equally adaptable to furnaces making

400,000-volt General Electric installation at the Chicago plant of the American Manganese Steel Co., which is daily being used to inspect manganese steel sections 5 in. or more in thickness, an operation which a year ago was entrusted to gamma rays. A visual proof of this is shown in Fig. 2, which is an exograph of 5 in. of manganese steel. This reproduction does not do the radiograph justice, but three dark bands are clearly discernible. These bands represent slots in the interior of the steel 0.3, 0.2, and 0.1 in. in thickness respectively. Consequently the 0.1 in. slit corresponds to a definition of 2 per cent in the 5 in. section. The exposure time was 13 min.

This equipment is being used daily by the American Manganese Steel Co. in routine examinations

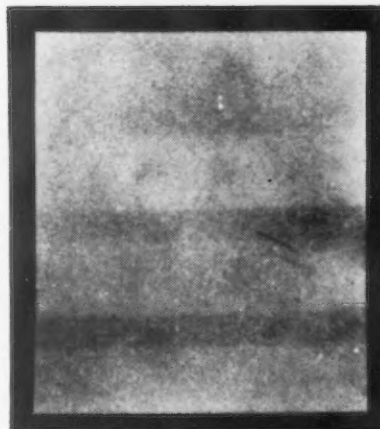


FIG. 2—An exograph of 5 in. of manganese steel. The three dark bands represent slit sections of 0.3, 0.2, and 0.1 in. thickness respectively. The 0.1 in. slit at the top corresponds to a definition of 2 per cent.

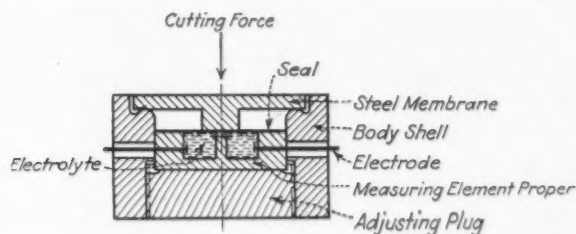


FIG. 3—Sectional view of a new German instrument for determining the cutting pressure of a machine tool. This device can also be used for protecting a machine from overloading.

ordinary iron and to furnaces exclusively making high-quality special irons.

of pilot castings of each lot of manganese steel and chromium-nickel alloy castings produced.

Five Inches of Steel X-Rayed With 2 Per Cent Definition

THE increasingly rigid specifications for cast and/or assembled parts seem to guarantee an increasing interest and use of various non-destructive tests. Both the X-ray and gamma ray methods have become important tools to manufacturers who turn out products with a minimum of internal imperfections.

Although the use of gamma rays has usually been preferred for the examination of sections over 4 in. thick, the manufacturers of X-ray equipment have constantly pushed up the voltage of tubes in order to adapt their method to the larger sections. The penetrating power of gamma rays corresponds to X-rays excited by 600,000 volts or more, and there is every indication that the further will witness commercial X-ray installations approaching this level.

For instance, consider the new

Tool Holder Indicates Cutting Pressure

NEW alloys present many machining problems. Likewise the speeding up of finishing operations on products made from familiar steels and metals requires an intensive study of speeds, tool pressures, tool angles, shapes, etc. Reliable mechanical instruments for quickly and accurately recording tool pressures greatly simplify such investigations.

An instrument for this purpose has been placed on the market by Schiess-Defries A.G., Düsseldorf, Germany. This electric indicating tool holder, shown in Fig. 3, is intended both for the exact separate measurement of the cutting pressure in machining and as an automatic overload protection for the machine and tool during regular operation. The tool holder is small enough to allow it to be applied even to the standard slides of automatic screw machines. The tool-

carrying member is a body pivoted in ball bearings.

From Fig. 3, the operation of this device is almost self-evident. Variations in tool pressure are transmitted to a steel membrane, which in turn alters the cross-section of a column of electrolyte traversed by an electrical current. The varying electrical resistance of the electrolyte can then be suitably recorded. By turning a plug provided in the bottom, the gaging element proper can be moved relative to the membrane and the measuring range thereby varied within wide limits. Movements of the tool in this holder are so small as to be practically equivalent to actual operation of a rigid tool.

(CONCLUDED ON PAGE 75)

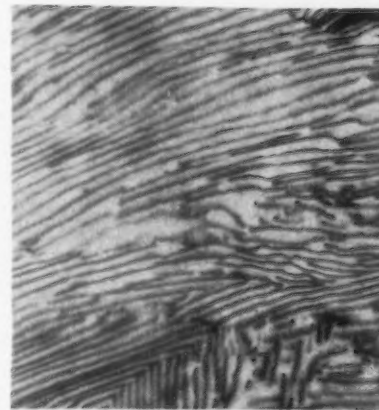


FIG. 4—Ordinary hot-rolled slightly hypoeutectoid steel viewed at 4000 diameters. At 200 diameters this steel shows a familiar troostite structure, but at high magnification and high resolution the apparently structureless areas are shown to be fine pearlite.

Light-Weight Cellular Brick Made

By T. E. WOOD

Manager, Industrial Department,
Manufacturers Light & Heat Co.,
Pittsburgh

INSULATING brick of low thermal conductivity and light weight is manufactured by the Armstrong Cork & Insulation Co., Lancaster, Pa., at its Beaver Falls, Pa., plant. One of the ingredients used in making the brick is diatomaceous earth, a light cellular mineral that has very low heat conductivity. Pulverized and mixed with ground cork and clay, this earth is molded into brick and fired in a kiln. The cork is burned out, leaving additional air cells that help to increase the insulating qualities.

Brick Made in Large Presses

The brick are made by the soft mud process, which consists of mixing the materials with water to obtain the right plasticity, filling multi-cavity molds with this mixture, and subjecting it to high pressure in large presses. The molds are moved out of the presses and mechanically upset so that the brick and shapes fall on traveling belt conveyors which take them to the dryers. These consist of long rooms with tiers of shelves on both sides, and a conveyor runs down through the center. Operators remove the brick and pile them on the shelves, where they are dried with heat from steam coils. Large special shapes are molded by hand.

Firing is accomplished in one of two gas-fired kilns, each 300 ft. long. These are parallel, with three loading and unloading tracks

AFTER being subjected to high pressure in the large press the newly made brick falls on a traveling belt conveyor which takes it to a dryer.

between, and transfer tracks on each end by which the cars are transferred to and from the kiln tracks. Cars are pushed through the kilns by mechanical pushers. Heat is supplied to each kiln by eight gas burners, four on each side, and, as there is no muffle, combustion takes place directly within the kiln.

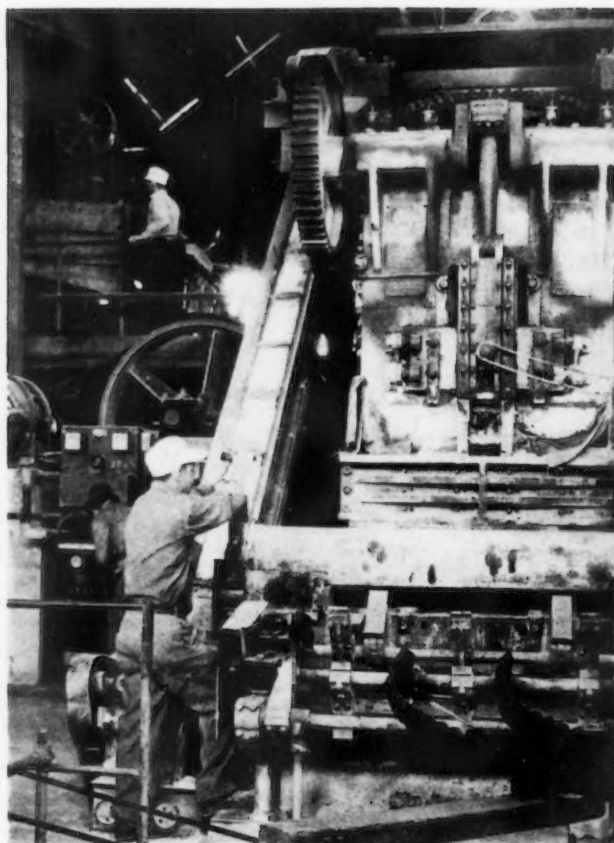
Nozzle mixing burners are employed, air being supplied by a motor-driven blower through one pipe and gas through another, both of which terminate in the burner. Orifices are set in a ratio of 10 to 1 and the gas and air pressures are always maintained at the same pressure by a zero governor in the gas line and a by-pass from the air line.

Fluctuations in the air pressure by turndown or otherwise are instantly reproduced in the gas line and this system permits a single valve control, in this case a blast gate valve in the air line.

Brick Machined to Size

Machining to size is an important phase of production here and the tolerance is held to 0.01 in. When the brick are fired they acquire a slight bow, and correcting this is the first machining and is accomplished in grinders with emery and carborundum wheels. The other faces are then finished to size.

Another important activity of the company, in connection with its customer service, is the manu-



for Furnace Insulation

facture and stocking of a large number of special sizes and shapes. In making up many of these, a standard size 24 x 12 x 4½ in. is produced and these are cut to specifications with circular and hand saws and disk grinders.

The company produces three types of insulating brick: Nonpareil brick which is used at temperatures up to 1600 deg. F.; Armstrong's brick for temperatures up to 2500 deg. F., and EF brick, a material especially developed for

direct exposure in furnace atmospheres, provided there is no mechanical abrasion or direct flame impingement.

None of the porous types of brick can be used where they will be exposed to abrasion, slagging action or flame impingement. However, where an abrasive combustion cannot be avoided, a facing material can be applied that will withstand the direct force of the flame.

Nonpareil insulating brick, it is

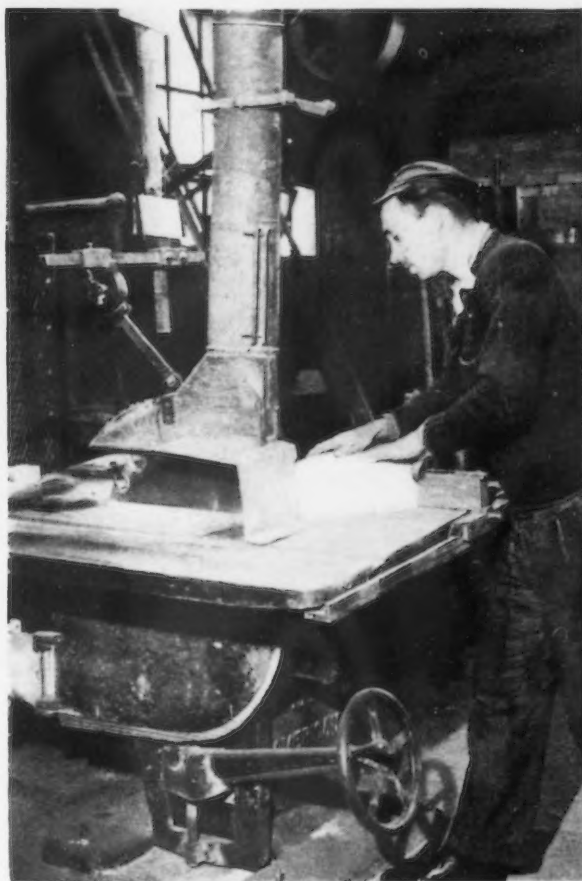


Standard sizes for skewbacks, circular crowns, etc., are made in this way.

Frequently this entails special service. For instance, given the span and rise of a special arch, the engineering department works out the dimensions of the individual blocks and these are cut and machined to size. Adjustable saw tables are provided for a wide range of tapers and heights. Shapes for suspension are drilled for pins and are used for placing a flat arch where furnace conditions permit.

AT LEFT
AFTER being dried, the brick is fired in one of two gas-fired kilns, each 300 ft. long. This

view shows the fire box on one of these tunnel kilns with the regulating devices for controlling the temperature. Actual temperature measurements within the fire box are made by the thermocouples seen installed above the fire box.



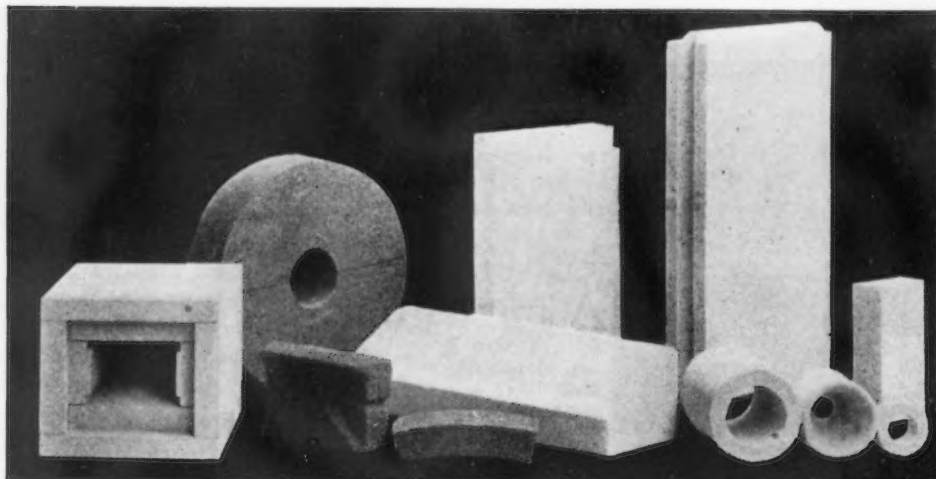
CUTTING table showing one method of cutting special shapes of insulating material to size. Various types of cutting wheels are used and precision sizing is adhered to on all dimensions cut. In this view the workman is making a preliminary set-up and setting the guides to the proper dimension before making the cut.

said, has ample structural strength for weights and stresses ordinarily encountered in furnace construction. Crushing strength exceeds 200 lb. per sq. in. at temperatures up to 1600 deg. F. and the brick will not shrink, crack, spall or fuse at this temperature when used back of a suitable thickness of re-

part of the masonry construction. Where heavy walls are required for structural strength or heat storage, they displace an equal number of second quality firebrick or common brick.

Armstrong's insulating brick has the same structural strength as the Nonpareil but can be used

is provided to withstand the direct force of the flame. A 9-in. wall of this brick is said to have about the same heat resistance as 22½ in. of fire brick and 2½ in. of ordinary insulating brick with practically the same heat loss through the furnace walls. The heat capacity, however, is in proportion to



SOME of the refractory shapes which the company is called upon to make from time to time. (The brick standing on end at the extreme right is the standard 9 x 4½ x 2½-in.)

fractory. A standard straight 9 x 4½ x 2½-in. Nonpareil brick weighs but 1.8 lb. Its use, it is stated, results in a saving of from 60 to 70 per cent of the heat loss as against uninsulated construction. Among the more common applications are: heat treating and annealing furnaces and ovens of all kinds; bake ovens, core ovens, enameling and japanning ovens, blast furnace stoves in cooler zones, gas benches, kilns, lehrs, regenerators, etc. These brick are laid as

at temperatures up to 2500 deg. F. The weight is 2.25 lb. each. Primarily an insulating brick, they are designed to back up the refractory.

EF insulating brick has greater strength than those described at temperatures from 1600 to 2560 deg. F. and weighs 2.75 lb. for 9-in. straights. It varies from the others in that no firebrick protection is necessary except where an abrasive combustion cannot be avoided and in this case a facing material

the weight of the two structures, the heat capacity of a furnace built of this brick being approximately one-sixth that of the heavier fire brick and insulating brick type. Furthermore, this brick permits greater furnace production due to greater hearth area for the same outside dimensions.

All these brick are made in refractory shapes and sizes, and special shapes are supplied up to 288 sq. in., 4½ in. thick, on specifications.

World's Shipbuilding Lower for Quarter

A DECLINE of about 4.5 per cent in the world production of merchant vessels during the closing months of 1934 is shown by the returns of Lloyd's Register of Shipping for the three months ended Dec. 31. The returns, which show a decrease of about 60,000 gross tons, as compared with the total under way at the end of September, include all merchant ships of 100 gross tons and more being constructed throughout the world, except in Russia, for which no returns have been available for some time.

In contrast with conditions a

year ago, however, the aggregate tonnage being built in all countries shows a gain of nearly 500,000 gross tons. During the quarter just ended, slight decreases in the volume of merchant ship construction under way were reported for Great Britain and Ireland, Sweden, Italy and the United States, while there were larger declines for Japan and Holland. Gains were shown for Germany and Denmark, while the figure for French production remained practically unchanged.

The present total of world construction is 1,251,722 gross tons,

and of this amount 47.7 per cent is being built in Great Britain and Ireland, 1.6 per cent in the United States, and the remaining 50.7 per cent in the other shipbuilding countries, taken as a group. Only 757,000 tons were being produced throughout the world at this time last year, and Great Britain and Ireland were constructing 43.8 per cent of this, the United States 1.6 per cent, and the remaining countries 54.6 per cent. Great Britain and Ireland have been slowly forging back toward the position they formerly held, when they built more merchant shipping than all the other maritime nations combined.

Mountain Pipe Line Constructed by Welding

PIPE used in the construction of the 84-in. diameter water pipe line completed recently high up in the Rocky Mountains for the Santa Maria Reservoir Co., located 30 miles west of Creede, Colo., was fabricated entirely by arc welding. Shop seams were welded automatically, pipe elbows manually.

The pipe is of three thicknesses, about 10 per cent being $\frac{3}{4}$ in., 55 per cent $\frac{5}{16}$ in., and the balance $\frac{3}{8}$ in. It was fabricated in 35-ft. lengths, and the entire contract involved about 1300 tons of steel.

Every foot of the pipe was tested after fabrication by a special testing machine. The $\frac{3}{4}$ -in. pipe was tested at 186 lb. pressure per sq. in., the $\frac{5}{16}$ -in. at 165 lb. per sq. in.

Getting the pipe the 350 miles from Denver to the site of the pipe line required moving it 320 miles by train and then 30 more miles over mountain roads. There were approximately 135 carloads of pipe, each load consisting of two lengths of pipe, weighing about 6 tons each. Only one length of pipe could be carried per trip by trucks.

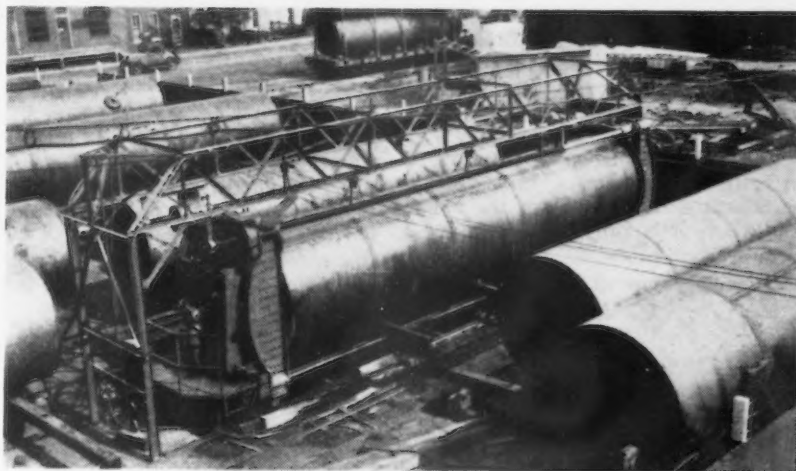
A set of test specimens was taken for each three lengths of pipe. The tensile test specimens were nicked so that they would be forced to break in the weld, and most of them showed a tensile strength of 80,000 lb. per sq. in., compared with a tensile strength of 55,000 to 65,000 lb. per sq. in. in the parent metal of the pipe itself.

The official field test consisted of welding a head in the outlet end of the line and filling the line full of water, allowing it to remain under a pressure of 100 lb. per sq. in. for 24 hr. Not a single leak was discovered in the entire $8\frac{1}{2}$ miles of arc-welded seams and joints.

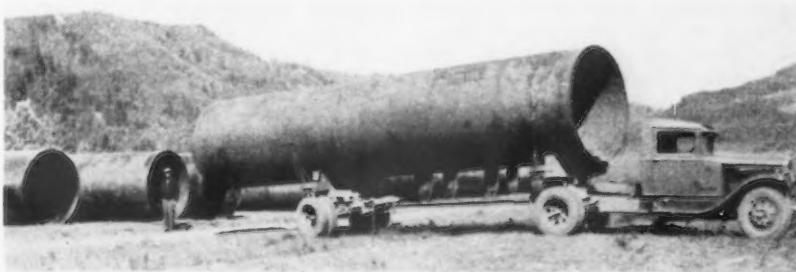
All welding, both shop and field, was done by the Thompson Mfg. Co. of Denver, the "electronic tornado" process of automatic welding with equipment supplied by the Lincoln Electric Co. being used to fabricate the pipe and Lincoln gas-engine driven machines for the field welding.



• • • BIRDSEYE view of Santa Maria pipe line constructed by arc welding at an altitude of 10,000 ft. in the Rocky Mountains.



• • • THE pipe was tested at a pressure of 186 lb. per sq. in. on this special testing machine following fabrication by welding.



• • • LENGTHS of pipe weighing 6 tons had to be transported 30 miles over mountain roads. Only one 35-ft. length could be carried per trip by trucks.



• • • A 35-ft. length of pipe spanning a mountain stream. Two joints welded in the field can be seen with an automatic girth seam between them.

Simplified Light Type No. 2 Plain Miller Features Sensitivity and Speed Range

A RECENT addition to the Brown & Sharpe Mfg. Co., Providence, R. I., line of milling machines is a light type No. 2 plain machine designed for use where the work is of the lighter classes. This milling machine, presented as a simplified model is pictured on page 32.

The spindle height has been lowered and the correspondingly lower height of the table results in more convenient handling. The machine is a self-contained flanged-type motor-powered unit, the motor pinion meshing with internal gear of the main driving shaft. Motor runs only when machine runs and the starting lever also serves to apply a brake for quick stopping. All wiring is inclosed in a compartment directly beneath the motor where it is fully protected, yet readily accessible.

A wide range of speeds is pro-

vided, arranged in two series, giving 16 spindle speeds from 40 to 1300 r.p.m. Changes are made by convenient rotating lever on the side of the column in conjunction with back gear and high and low series lever; one-quarter revolution of the rotating lever giving a change in speed in the series engaged. Convenient single lever feed control is also provided for the 16 feed changes from $\frac{1}{2}$ in. to $18\frac{1}{4}$ in. per min., one revolution of the lever giving a change in feed rate. All feeds can be disengaged by placing the feed lever in locked position, thus preventing accidental engagement of feeds when power feeds are not required. Directional longitudinal feed engagement is provided on the front of the table, in addition to the transverse and vertical feed engagement levers on the side of the knee. Hand adjustments are obtained by the

usual handwheels and cranks, with quick return of table obtained by internal gear and pinion. Knee clamp is conveniently located at the front of the knee. A change from the conventional design of column has been made by the face on which the knee rests, being set back approximately 4 in. from the end of the spindle. Not only does this give added clearance for vises, fixtures and work, especially when using end mills, but also permits cutters to be set nearer to the spindle nose.

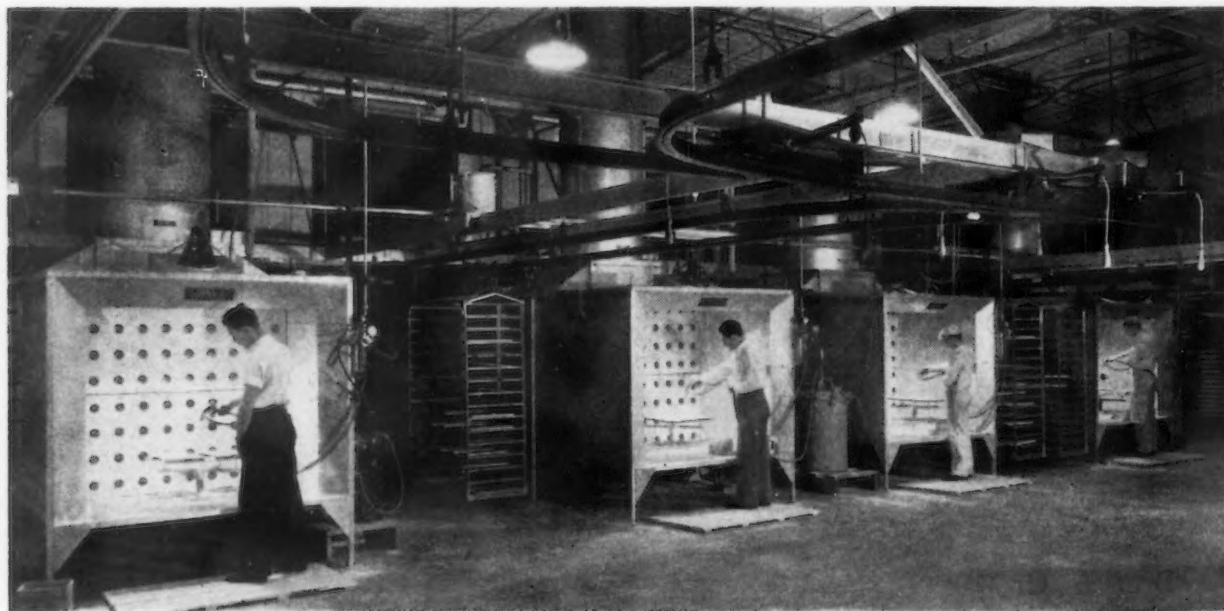
The mechanism within the column employs all heat-treated alloy steel gears in both the feed and speed mechanisms. Ground tooth gears are used throughout in the speed train and the spindle drive is always through the spindle gear mounted on the spindle directly behind the front bearings and driven through six integral splines. All driving shafts in the column are splined and mounted on anti-friction bearings. The mechanism within the column is lubricated by a plunger type pump mounted on the side of the column

Water-Wash Booths Reclaim Enamel During Processing

SIX of a ten-battery reclaiming type water wash booths, served with a special conveyor system, have been put into operation by the Edison General Electric Ap-

pliance Co., Chicago, for the volume production of "Hotpoint" stoves. The installation, by Binks Mfg. Co., 3114 Carroll Avenue, Chicago, is said to reduce enamel

dust loss through the air, from 18.6 per cent to 2.2 per cent representing, it is estimated, some \$17,000 of enamel reclamation over a yearly period.



in a unit assembly with oil filter and pressure gage. The machine is arranged to take, when desired, a compact, individual motor-driven centrifugal coolant pump, which operates only when the machine is running.

To the general usefulness of the machine has been added an improved universal milling attachment with crane which permits the attachment to be swung to the side of the machine when not in use. The attachment has the new Brown & Sharpe cam lock construction for holding cutters, etc. The wide range of adjustment of the attachment, together with the speed range, from 82 to 2672 r.p.m., provides a means of handling a great variety of work requiring shell end mills from approximately 2½-in. diam. to the tiny end mills used in mold and die work. Finished pad is provided on the side of the machine where the attachment can be bolted when not in use. A short end feed reducing attachment is driven from the table feed screw, and permits extremely fine feeds. It may also be used with the universal index centers and universal milling attachment for obtaining short leads. When used without the universal spiral index centers, feeds 1/20 of the indicated rate are given for work requiring extremely fine feeds such as milling with a fly cutter. It also permits obtaining leads 1/20 of normal when geared to the worm of the headstock and extremely fine leads 1/800 of normal when geared direct to the headstock spindle.

A vertical milling attachment can be furnished; this clamps to the overarm and is adjustable horizontally. Also 10-in. and 18-in. hand feed rotary attachments and 18-in. power feed rotary attachment which is driven from the table feed shaft can be furnished.

Capacity of the machine is: longitudinal feed, 28 in.; transverse feed, 10 in., and vertical feed, 15 in., all automatic. Net weight of the machine is approximately 2400 lb., including 3-hp. motor as standard equipment.

The Detroit Electric Furnace Co., Detroit, has licensed the Birmingham Electric Co., Birmingham, England, to manufacture and sell Detroit rocking furnaces in certain European countries. The English furnaces will be sold abroad under the name of Birlec Detroit rocking furnaces. This type of rocking indirect arc furnace is used both here and abroad for melting brass, iron and alloy steels.

High-Duty Draw-Cut Hydraulic Flash Trimmer For Steel-Ring Weld Flash Removal

A NEW high-duty draw-cut flash trimming machine especially designed for removing the flash from butt welded steel rings such as automobile wheel rims is announced by Morton Mfg. Co., Muskegon Heights, Mich. In range, the machine will take a width of seam up to 12 in. and stock thickness from No. 24 gage to 3/16 in. Power is applied by an electric motor driving a hydraulic pump. Variable and return speeds from 0 to 65 ft. per min. are provided. The equipment is pictured on page 32.

Power is applied to two reciprocating rams by means of hydraulic-operated cylinders. The work is placed between hardened dies and sufficient pressure is applied through a hydraulically operated, spring-loaded toggle motion to securely clamp the work while trimming. A patented feature of ver-

tically adjustable ram and dies is employed which automatically takes care of the clamping and positioning of the cutters in relation to the work, and compensates for any variation in stock thickness.

The upper ram raises 2 in., giving sufficient clearance for entering and removing the work. The cycle of operation is automatic; as the work is entered, the operator steps on the button, the machine automatically clamping starts its cut on the draw-cut stroke, releases the work at the end of the stroke, and the cutting tools return to the out position. The distance from the clamping die to the floor is 55 in.; this may be varied to meet requirements.

Adjustability and interchangeability feature tool holders and tool set-up.

New High Speed Wire Drawing Equipment

AS a result of its development of wire spooling equipment the Waterbury Farrel Foundry & Machine Co., Waterbury, Conn., announces a new line of upright cone wire drawing machines with which the new spoolers may be used.

On page 32 is shown a No. 1-16 die machine with a 100-lb. floor type spooler attached. For spools 2½ lb. up to 20 lb. the company offers a type spooler which attaches to the machine and has speeds up to 6000 ft. per min.

The drawing rolls of the machine are in the form of a cone and are so proportioned that a minimum of slip results. The roll is constructed of a number of hardened steel rings and spacers. The die holders travel in and out to prevent wire cutting the cones at one place.

All rotating parts are mounted on anti-friction bearings and a self-contained oil pump provides continuous oil spray. The machine is also equipped with a pump which takes care of die lubrication. A folding front hood prevents the out-splashing of drawing compound and provides that the cones and dies shall be continuously flooded with compound.

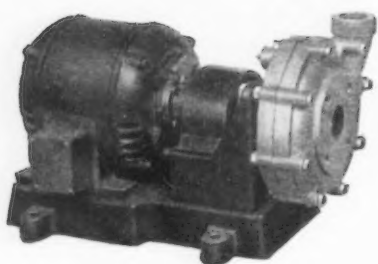
The direct motor drive equipment includes a jog button control

to string up the machine and a stop-and-go button for running positions. The equipment has been designed primarily for drawing non-ferrous wires, and is built in four machine sizes with a maximum starting size of No. 6 B&S and a minimum finish of No. 44 B&S. With each size can be furnished either block or spooling devices or a combination of the two.

Non-Metallic Pump In Medium Capacities

THE American Hard Rubber Co., 11 Mercer Street, New York, announces a new type WAM centrifugal pump for medium capacities up to 90 gal. per min. at 12 ft. head. The equipment is illustrated on page 32.

The casing of the pump is made of acid, heat and distortion resisting hard rubber. It is mounted to the base by means of acid-resisting hard rubber covered casting which acts as a chamber to catch drip from the stuffing box. Bypass is adjustable and cored into back casing. The motor shaft is extended, tapered and pinned into the pump shaft, with all parts interchangeable.

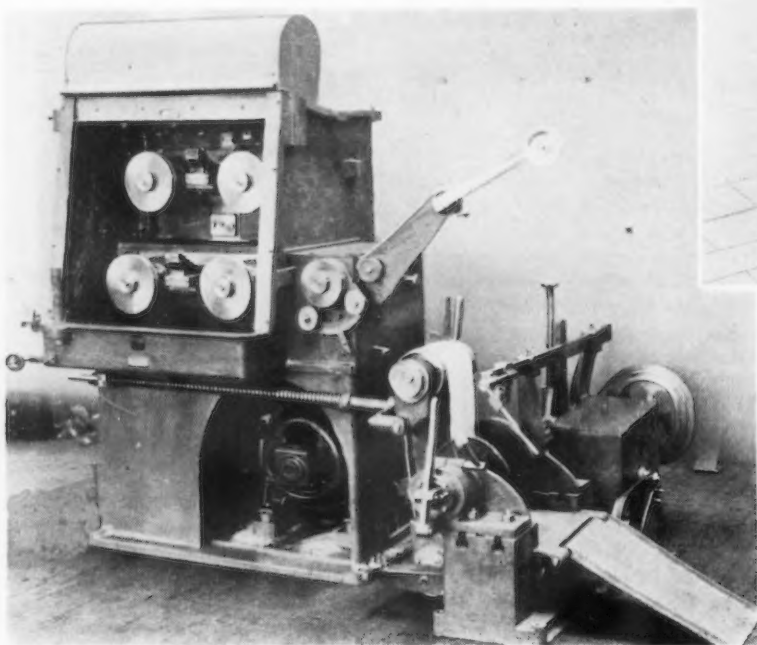


ABOVE
Non-Metallic Pump in Medium Capacities—Acids and corrosive chemicals up to 90 gal. per min. at 12 ft. head are handled by this new pump.

See page 31, column 3.

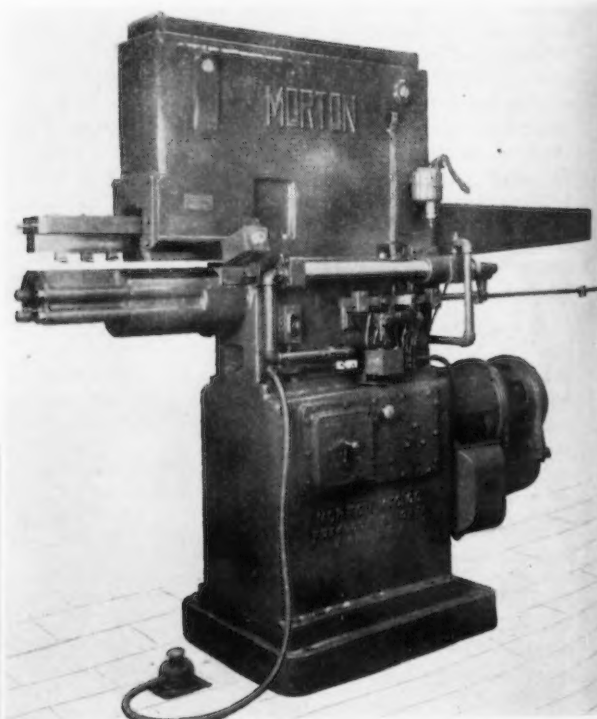
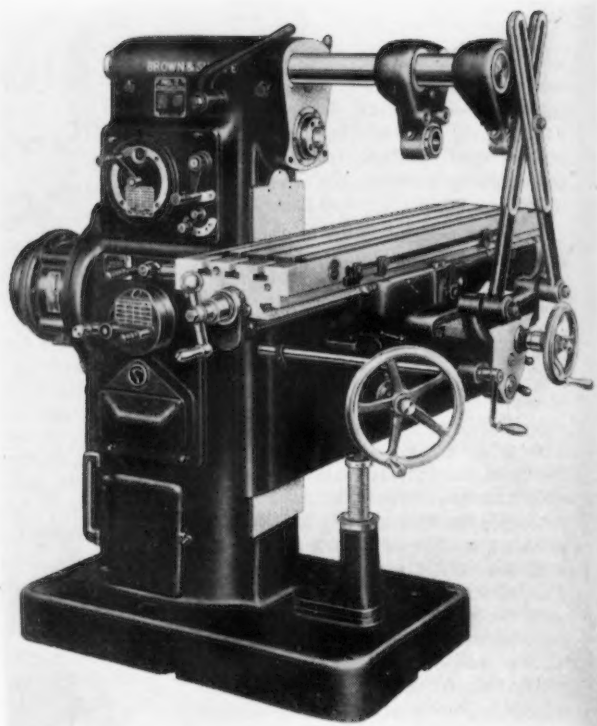
BELOW
New High-Speed Wire Drawing Equipment—New spoolers having speeds up to 6000 ft. per min. have resulted in the development of a new line of wire drawing machines.

See page 31, column 2.



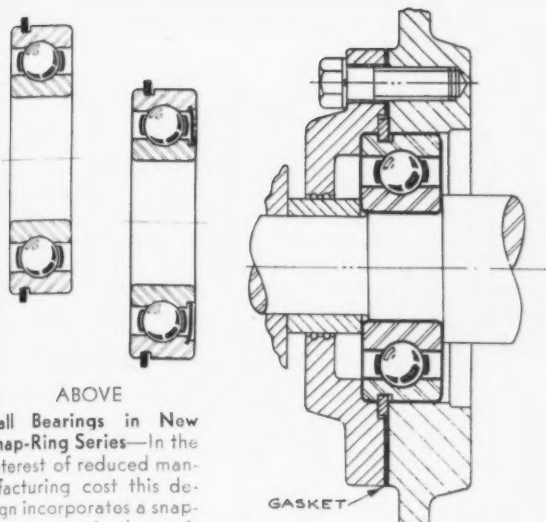
AT RIGHT
Simplified Light Type No. 2 Plain Miller Features Sensitivity and Speed Range—Sensitivity rather than increased size, weight and added horsepower features the design of this machine.

See page 30, column 1



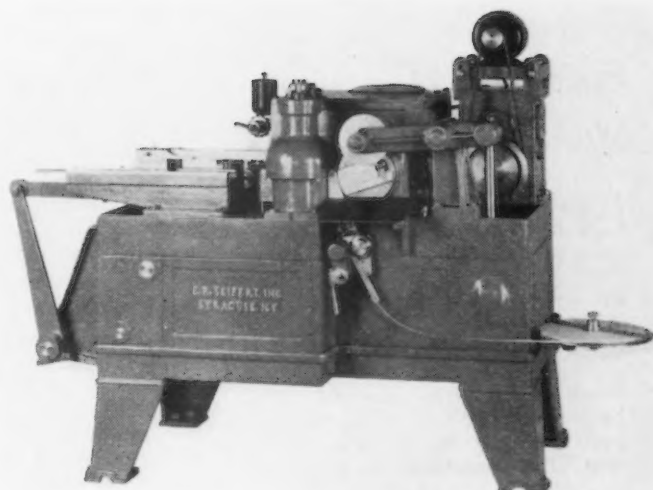
ABOVE
High-Duty Draw-Cut Hydraulic Flash Trimmer for Steel-Ring Weld Flash Removal—Vertical adjusting of the rams and dies is a patented feature which is embodied in the design of this new equipment.

See page 31, column 2.



ABOVE
Ball Bearings in New Snap-Ring Series—In the interest of reduced manufacturing cost this design incorporates a snap-ring groove in the periphery of the outer race for the elimination of the machining involved in one shoulder of the housing.

See page 34, column 2.



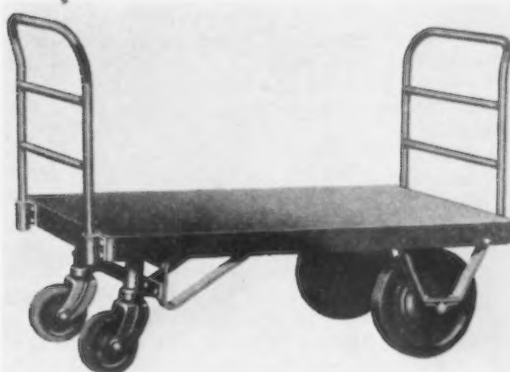
ABOVE
Starter Field-Coils Completed Automatically With Contact Bends All Made—The loops and bends required for starter contacts are included in the six-second production from this machine.

See page 34, column 1.



ABOVE
Blueprint Machine for Departmental Use—The size and convenience of this equipment make it adaptable for auxiliary use in cases where manufacturing is departmentally assigned.

See page 34, column 3.



ABOVE
New Platform Truck, Light Steel Model—The platform, end-rails and side rails of this all-steel truck are pressed from one sheet of steel. The corners are electrically flow welded. The molded demountable rubber wheels are equipped with roller bearings and are of 8 and 16 in. in diameter. The truck is one of a new and wide line built by Lansing Co., Lansing, Mich.



ABOVE
Predetermined Humidity is Maintained—By means of a combination of membrane material and contact type bends employed, close electric control of humidity is obtained.

See page 34, column 2.

AT RIGHT
Diamonds Divide Load in Wheel Dressing—The three styles of diamond mounting here shown are designed to facilitate abrasive wheel dressing. Two of them throw the dressing burden on two or more cutting edges simultaneously.

See page 34, column 1.

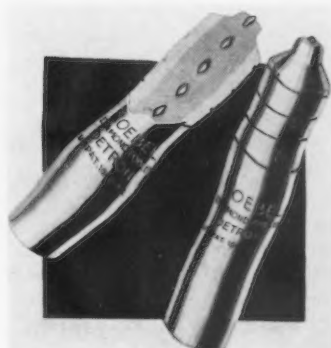


Fig. 1



Fig. 2



Fig. 3

Starter Field Coils Completed Automatically With Contact Bends All Made

ON page 33 is pictured a machine designed to automatically wind starting motor field coils from flat bar copper wire, form the terminal loop on the end of the wire, insert fiber insulation between each turn of the wire, and eject a completely finished coil every 6 sec. The machine is a patented product of E. R. Seifert, Inc., Syracuse, N. Y. The operation of the machine is described as follows: A feed slide straightens and feeds the wire to the terminal forming head. This head shapes the end of the wire into a right angle, edgewise bend, also forms a loop which is followed by another right angle bending operation. The wire, thus prepared, is carried by the feed slide forward into the winding head where an automatic clamping arrangement clamps the wire by the prepared terminals and holds it during the process of winding the coil. The winding spindle sets into motion at a slow speed and, after three-quarters of a turn, the paper feeds in under the wire and the winding spindle automatically shifts into high speed and winds a predetermined number of turns. Speed control reduces the spindle speed just prior to the completion of the predetermined number of turns and a stopping mechanism stops and locks the winding head in a certain fixed position. The terminal clamps open and the coil is automatically ejected.

Diamonds Divide Load In Wheel Dressing

METHODS of diamond mounting which depart from conventional procedure in the assembly of wheel dressers are shown on page 33. The methods are presented by Koebel Diamond Tool Co., Detroit.

Fig. 1 illustrates a three, four or five whole diamond in line-mounting for straight face or form dressing. After the first diamond is used up in service the shank is turned or ground back to expose the next whole diamond. New embedding metal is said to fuse well below the critical temperature of the diamonds and to have practically the same coefficient of expansion as the diamond. The ring grooves shown are merely for guidance in turning or grinding back to the next diamond.

Fig. 2 illustrates a chisel edge dresser, for any straight-faced wheel. When traversed across the wheel, the three diamonds take a progressive cut.

Fig. 3 illustrates a seven-diamond mounting for high finish. Held at a flatter angle than a single point tool, this multi-point tool presents two to five contacts with the wheel. This type holder is emphasized as particularly adapted to the field of centerless grinding.

Ball Bearings in New Snap Ring Series

THE current demand for reduced costs of machining and assembly, and, therefore, of manufacturing, is being met by the Norma-Hoffman Bearings Corp., Stamford, Conn., with bearings of new series, among which the 4000 series and the 4000-P series, shown on page 33 are prominent.

Fig. 1, 4000 series, has a snap ring of steel inserted in a groove in the periphery of the outer race, close to one face. This ring, protruding around the outer race, eliminates one shoulder from the housing. Fig. 2 is closely related to this bearing, differing only by the addition of one slide plate or shield for grease retention. Fig. 3 illustrates the usual manner in which these snap-ring bearings are clamped in a housing. In the case of the Fig. 2 bearing the shield is at the side opposite to the snap ring.

Predetermined Humidity Is Maintained

THE controlling element in the Rotax indicating relative humidity controller, illustrated on page 33 is of membrane type with a range of 100 per cent relative humidity. Rotax type contacts are employed to form an electrically-operated controller. This combination, it is said, is new. Humidity is maintained at an indicated setting by solenoid valves and motor valves on water, air or steam lines. The relay set required is located inside the case which is of size for convenient locating and mounting.

The utility of the equipment is stressed for mills and factories requiring a rugged, electrically-operated controller for spray valves or locations where the moisture content of the air must remain constant. Contacts are of brush and rotating commutator type giving uniform contact pressure and self-cleaning action. The equipment is designed for use between plus 10 deg. F. to plus 120 deg. F., and is built by the Foxboro Co., Foxboro, Mass.

Blueprint Machine for Departmental Use

THE blueprinting machine, pictured on page 33, is new equipment now marketed by Milligan & Wright Co., 4625 Prospect Avenue, Cleveland.

The lamp employed is of incandescent type and operates from regular 110-115 d.c. or a.c. lighting circuit; the quality of light produced is stronger in the blue-print end of the spectrum than is the case in ordinary incandescent lamps. The portable model No. 100 pictured will print one 18 x 24-in. or two 12 x 18-in. or four 9 x 12-in. prints at a time. In operation, the tracing and paper are positioned on the glass top; the pressure pad is lowered and the cover closed. An automatic time switch clicks off for removal of print, washing and drying on a special board which is part of the machine equipment.

Color Identification For Steel Bars

A COLOR code for marking steel in bars (flat, oval, hexagon, round, and square) has been adopted by the National Association of Purchasing Agents. It was developed by its committee on iron and steel on the basis of the Society of Automotive Engineers' designation by number of the well-known kinds of steel.

The code gives color markings for S.A.E. carbon, screw stock, nickel, nickel-chromium, molybdenum, chromium, chromium-vanadium, silico-manganese and tungsten steels, and for stay-bolt steel. According to a statement made by the association, the color code has been made part of the Federal standard stock catalog and is mandatory in all departments of the Government.

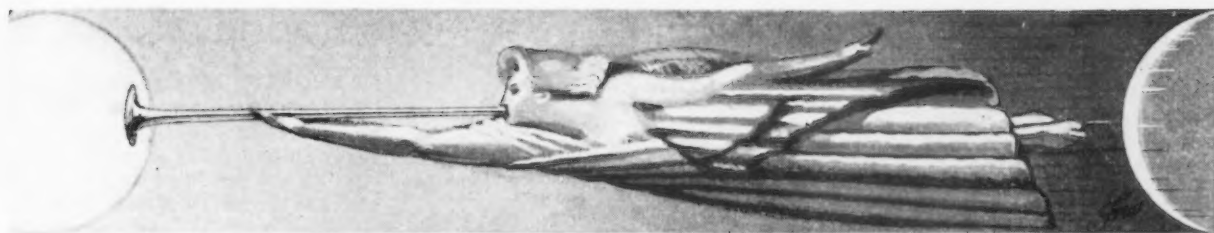


GEORGE H. HOUSTON, Drawn by John Frew for The Iron Age

AS chairman of the Durable Goods Committee, appointed by General Johnson on March 7, 1934, George H. Houston and his committee associates have accomplished much for the heavy industries of our country. The report of this committee to the President, of May 14 last, was a noteworthy factual analysis of the obstacles preventing recovery in the industries financed primarily through long-term investment and in which, with related service industries, was the great bulk of unemployment.

Through this report and through a consistent and continuous preaching of the gospel of sound industrial economics, Mr. Houston has succeeded in obtaining a much more sympathetic understanding of the problems of our "durable" goods industries, so many of which lie in the field of The Iron Age.

In addition to this outstanding service to industry and the public, Mr. Houston carries many private executive responsibilities. He is president of the Baldwin Locomotive Works, of the Baldwin-Southwark Corpn. and of the Standard Steel Works. He is executive committee chairman of General Steel Castings Corpn. and also of the Midvale Co.



NEWS OF THE WEEK

Bethlehem Steel 1934 Net Was \$550,571; Will Build Strip Mill at Buffalo

NET income of the Bethlehem Steel Corp. was \$411,099 in the fourth quarter of 1934, compared with a deficit of \$2,400,126 in the third quarter. In the full year net income was \$550,571, as against a deficit of \$8,735,723 in 1933.

Gross sales and earnings for 1934 aggregated \$166,957,632, compared with \$120,163,374 in 1933. Total new business booked during the year amounted to \$156,090,564 as against \$157,279,186 in 1933. The estimated value of orders on hand Dec. 31 was \$56,817,681, compared with \$58,476,986 at the end of the previous quarter and \$67,684,749 on Dec. 31, 1933.

Eugene G. Grace stated that operations averaged 26.2 per cent of capacity during the fourth quarter, as against 22.8 per cent in the preceding quarter. Operations in the entire year averaged 34.9 per cent, compared with 28 per cent in 1933. It was stated that current operations are at about 40 per cent.

Mr. Grace was of the opinion that present orders indicate that operations at 40 per cent would probably last for the quarter. He stated, however, that there was no indication that heavy goods would pick up in the second quarter, and consequently the probable activity of that quarter is somewhat uncertain.

It was announced that \$20,000,000 is to be immediately spent on improvements at the Lackawanna, N. Y., plant. Complete new buildings will be erected to house a 79-in. continuous mill for the production of sheets and strip. This new unit will replace the old Seneca plant.

Inland Earnings High

The Inland Steel Co., Chicago, has reported preliminary earnings for 1934, subject to final audit, of \$3,730,332, equal to \$3.10 a share on the 1,200,000 common shares. Earnings in 1933 were equivalent to 13c. a share.

National Profits Top \$6,000,000

The National Steel Corp., in a preliminary statement subject to final audit, reports net profit for 1934, after all charges, of \$6,050,721, equivalent to \$2.80 a share on outstanding common stock. Net profit for the final quarter of 1934 was \$1,467,825, equivalent to 68c. a share. Net profit reported by National Steel Corp. for 1933 was \$2,812,406, equivalent to \$1.30 a common share, and the net profit for the 1933 fourth quarter was \$242,530, equivalent to 11c. a common share.

Superior's Loss Rises

The Superior Steel Corp., for the year ended Dec. 31, reports net loss after interest, depletion, depreciation and other charges, of \$264,865, compared with net loss of \$254,939 after similar charges for 1933. Net loss in the 1934 fourth quarter was \$95,746, compared with net loss of \$31,217 in the final quarter of 1933.

Republic Merger Plans Again Held Up

DIRECTORS of Republic Steel Corp. have voted to adjourn from week to week the stockholders' meeting scheduled to be held Feb. 5 to pass upon the plan for acquisition of the assets of Corri-

gan, McKinney Steel Co. control of Truscon Steel Co., and the recapitalization of the Republic corporation.

Imminence of the decision by United States Supreme Court in the "gold clause" cases makes impossible at the moment completion of arrangements for the sale of the corporation's new bonds which are to be issued under the terms of the plan, according to T. M. Girdler, chairman and president. He said the plan of adjournment from week to week was intended to "enable the corporation to proceed promptly as soon as conditions permit."

New York S.A.E. To Discuss Rail Cars

RAILROAD engineers and executives will join with the members of the Metropolitan section, Society of Automotive Engineers, in discussing a paper on "Modern Automotive Railway Equipment" at a meeting to be held at the Roger Smith, 40 East Forty-first Street, New York, at 7:45 p. m. Feb. 11.

Erving R. Gurney and Lowell H. Brown will present the paper which takes up first the economics of railway operation which points inevitably toward important benefits from the use of light, economical, stream-lined rail cars driven by internal-combustion engines. It next describes many American and foreign developments in this type of equipment, and finally depicts a new design of rail car having an inexpensive high-speed power plant with a novel form of control system and arranged to afford economical, frequent and rapid railway service.

The Struthers-Wells Co. will remove its Chicago office to Peoples Gas Building, 122 South Michigan Avenue, on Feb. 9.

Iron and Steel Exports in 1934 Rise—Imports Off

Exports of Iron and Steel from the United States

	(In Gross Tons)		Twelve Months Ended December	
	December		1934	1933
Pig iron.....	1934	1933	1934	1933
Ferromanganese.....	976	448	4,096	2,750
Scrap.....	51	5	195	44
Pig iron, ferroalloys and scrap.....	196,361	100,989	1,835,554	773,406
Ingots, blooms, billets, sheet bars.....	197,388	101,442	1,839,845	776,200
Skelp.....	1,679	150	19,586	3,159
Wire rods.....	428	532	74,501	23,260
Semi-finished steel.....	460	3,210	23,734	16,877
Steel bars.....	2,567	3,892	117,821	43,296
Alloy steel bars.....	5,538	3,095	42,964	22,251
Iron bars.....	248	443	2,911	1,797
Plates, iron and steel.....	32	104	1,002	675
Sheets, galvanized steel.....	4,039	3,343	39,077	15,132
Sheets, galvanized iron.....	5,659	7,031	67,148	52,694
Sheets, black steel.....	209	162	1,424	1,162
Sheets, black iron.....	9,471	4,160	90,997	37,078
Hoops, bands, strip steel.....	219	212	4,325	2,751
Tin plate, terne plate.....	3,528	1,871	29,284	20,252
Structural shapes, plain material.....	17,599	18,971	184,299	95,238
Structural material, fabricated.....	2,417	1,048	33,011	14,089
Tanks, steel.....	2,456	3,022	21,596	16,936
Steel rails.....	1,016	687	7,879	3,078
Rail fastenings, switches, spikes, etc.....	8,102	9,102	69,159	41,481
Boiler tubes.....	1,399	4,131	16,931	13,536
Casing and oil line pipe.....	703	341	8,245	3,916
Pipe, black and galvanized welded steel.....	3,912	5,729	59,782	40,615
Pipe, black and galvanized welded iron.....	3,057	4,016	43,829	34,301
Plain wire.....	305	101	2,406	1,432
Barbed wire and woven wire fencing.....	2,821	3,346	36,520	21,919
Wire cloth and screening.....	2,763	3,545	37,349	29,948
Wire rope.....	66	98	965	722
Wire nails.....	149	232	2,682	2,212
Other nails and tacks.....	1,017	1,115	13,201	10,251
Other wire and manufactures.....	382	371	4,937	3,964
Bolts, nuts, rivets and washers, except track.....	338	316	4,700	2,848
Other finished steel.....	533	436	5,141	3,681
Rolled and finished steel.....	159	65	1,795	1,293
Cast iron pipe and fittings.....	78,137	77,093	838,559	495,252
Malleable iron screwed fittings.....	2,145	475	17,703	11,614
Car wheels and axles.....	229	237	2,980	2,500
Iron castings.....	1,043	479	7,213	3,966
Steel castings.....	512	567	6,974	4,205
Forgings.....	273	71	2,448	956
Castings and forgings.....	361	323	4,221	3,148
Total.....	4,563	2,152	41,539	26,389
Total.....	282,655	184,579	2,832,764	1,341,137

Imports of Iron and Steel Products Into the United States

	(In Gross Tons)		Twelve Months Ended December	
	December		1934	1933
Pig iron.....	1934	1933	1934	1933
Sponge iron.....	3,642	15,531	115,470	158,596
Ferromanganese and Spiegeleisen ¹	102	...	898	619
Ferrochrome ²	3,534	4,123	39,961	59,119
Ferrosilicon ³.....	...	...	74	24
Other ferroalloys ⁴	274	62	993	875
Scrap.....	4,489	396	44,421	57,074
Pig iron, ferroalloys and scrap.....	12,041	20,112	201,863	276,409
Steel ingots, blooms, etc.....	312	101	2,137	1,039
Wire rods.....	962	1,143	10,655	13,341
Semi-finished steel.....	1,271	1,244	12,792	14,380
Concrete reinforcement bars.....	37	116	1,276	2,632
Hollow steel bars.....	59	102	824	973
Merchant steel bars.....	1,443	2,082	18,854	20,844
Iron slabs.....	...	...	1	1
Iron bars.....	88	60	802	499
Boiler and other plate.....	38	2	284	237
Sheets, skelp, and saw plate.....	143	722	4,286	9,300
Tin plate.....	27	28	174	260
Structural shapes.....	1,662	2,323	23,913	29,129
Sheet piling.....	...	...	1,109	166
Rails and rail fastenings.....	50	103	3,075	6,404
Welded pipe.....	74	260	1,740	4,149
Other pipe.....	270	326	3,068	2,334
Barbed wire.....	232	1,385	8,860	8,301
Round iron and steel wire.....	211	192	2,577	3,146
Telegraph and telephone wire.....	3	1	25	27
Flat wire and strip steel.....	180	134	1,805	1,326
Wire rope and strand.....	80	201	1,535	1,672
Other wire.....	52	111	800	1,614
Hoops and bands.....	1,033	1,267	17,858	21,323
Nails, tacks, and staples.....	435	324	7,018	6,469
Bolts, nuts, and rivets.....	8	27	250	276
Horse and mule shoes.....	49	7	428	351
Rolled and finished steel.....	6,274	9,775	100,562	121,434
Cast iron pipe and fittings.....	...	...	65	910
Castings and forgings.....	119	179	1,479	1,439
Total.....	19,708	31,310	316,761	414,572

¹ Manganese content.

² Chrome content.

³ Silicon content.

⁴ Alloy content.

EXPORTS of iron and steel products from the United States in 1934, buoyed up by heavy shipments of scrap iron and steel on the one hand and by some increase in every other class of material exported save one on the other, reached the high level of 2,832,764 gross tons and thereby exceeded the trade of 1933 by 1,491,627 tons and that of 1932 by 2,238,114 tons. While the greater part of this increase was in scrap—the trade in which rose 137.4 per cent—it should also be noted that exports on non-scrap items increased 75.6 per cent as compared with 1933.

The 1934 import trade took the opposite trend, declining 97,811 tons or 23.6 per cent to only 316,761 tons in all. Despite a sharp decline pig iron continued to be the chief item imported on a tonnage basis, followed by scrap and ferro-manganese and spiegeleisen—all raw materials for the domestic industry.

December exports declined 5.5 per cent from November's total and aggregated but 282,655 tons in all. Decreased shipments of scrap and skelp occasioned this for there were strong gains shown in tin plate, seamless casing and oil line pipe, and steel bars. The month's import trade—the lowest since July—totaled only 19,708 tons, declining 44 per cent.

United States Imports of Pig Iron by Countries of Origin

	(In Gross Tons)		Twelve Months Ended December	
	December		1934	1933
United Kingdom.....	1934	1933	1934	1933
British India.....	100	600	5,495	...
Germany.....	3,308	6,936	36,013	68,036
Netherlands.....	...	...	234	...
Canada.....	7,373	61,939	65,538	...
France.....	284	767	8,984	12,259
Belgium.....	...	...	100	...
Norway.....	50	125	100	125
Sweden.....	...	...	2,185	806
All others.....	230	991	3,435	...
Total.....	4,558	2,702	...	...
Total.....	3,642	15,531	115,470	158,630

Sources of American Imports of Iron and Manganese Ores

	(In Gross Tons)		December, 1934—	
	Iron Ore		Manganese Concentrates, 35 Per Cent or Over	
Canada.....	...	...	2,075	...
Cuba.....	11,000	...	...	...
Chile.....	42,900	...	...	...
Spain.....	53	...	...	...
Norway.....	6,791	967	...	...
Sweden.....	...	...	...	...
French Africa.....	...	...	...	...
Russia.....	7,900	...	...	...
India.....	...	...	...	...
Brazil.....	...	...	...	...
West Africa.....	...	...	...	...
Other countries.....	4,050	...	...	...
Total.....	72,694	3,042	...	...

Shipbuilding Inquiries Dominate British Iron and Steel Market

LONDON, ENGLAND, Feb. 4 (By Cable).—Fresh business in pig iron is much quieter, as consumers are covered some weeks ahead, but specifications are absorbing the entire output. Foreign shipments of pig iron in January were the heaviest since November, 1931. New business in hematite is better.

Makers of semi-finished steel are busy, although fresh business is light. No orders are being placed abroad, pending imminent decision of advisory board on higher United Kingdom import duties.

Finished steel is active with improvement in structural steel, boiler plates and sheets, while numerous shipbuilding orders to be placed promise increased demand. The export business is markedly better. Russia bought 25,000 tons of steel and placed a \$500,000 order for railroad wheels, axles and tires.

Tin plate home demand is good, but exports are quiet owing to quota adjustments. The Continental iron and steel market is slack with dwindling United Kingdom

and South American demand for semi-finished steel. There is a moderate turnover in merchant steel and plates, but sheets are dull. Belgium is complaining that German barter transactions are monopolizing certain markets. Belgium has booked a Russian order for 10,000 tons of plates and flat billets.

The International Wire Export Co. reports quiet demand and lower prices owing to American and Japanese competition.

Statistics on Steel Costs Misleading

THE Bureau of Labor Statistics, Department of Labor, in its publication, "Wholesale Prices," issued a table showing the fluctuation in prices of various building materials. This table made it appear that the cost of structural steel is today approximately 92 per cent of the 1926 cost and that the cost had dropped to as low as 81 per cent in March, 1933.

This statement of the cost of structural steel when applied to the cost of buildings is entirely misleading, according to the American Institute of Steel Construction.

The statement, according to the institute, would make it appear that the cost of fabricated steel is based upon the cost of the plain material purchased by the fabricator. "Such is not necessarily the case. The fluctuation in the base price of structural steel purchased of the mill is not always reflected in the cost of the erected steel to the consumer. The plain material represents less than 50 per cent of the cost of steel erected, as it does not include the cost of shop fabrication, freight, or erection. Taking a group of comparative buildings for which steel has been fabricated and erected, if the cost of this work to the consumer in 1929 equaled 100, the cost to the consumer during 1932 was 76. That was the low point for prices during the depression.

"There has been an increase of about \$4 a ton, or about 10 per cent in the price of the plain material since the advent of the iron and steel code," the institute says, "but despite this increase in the price of the plain material, the sales price to the consumer of fabricated steel erected was, during the last quarter of 1934, not over \$2 a ton on the average more than the cost of similar erected steel in

1932. The fabricator and erector of structural steel therefore not only absorbed one-half of the increase in cost of plain material, but absorbed entirely the 33 per cent increase in labor costs of the fabricator which has taken effect since the low point of the depression in 1932. Therefore, today the price which consumers pay for fabricated and erected structural steel approximates 78 per cent of the 1929 price. The advance in the cost to the consumer of erected steel has not been in excess of 3½ per cent over the low point of the depression."

Coke Production Still Increasing

FOR three successive months the production of coke has shown an advance over the preceding month. The total output of by-product and beehive coke for December amounted to 2,501,441 tons, or 81,339 tons per working day, an increase of 2.7 per cent when compared with the November rate of 79,201 tons. The gain was a reflection of the improvement in the iron and steel industry, where the daily rate of pig iron output increased 3.9 per cent during the same period.

Production of by-product coke for the 31 days of December was 2,417,841 tons, an average of 77,995 tons per day. In comparison with the November rate of 75,582 tons there was an increase of 3.2 per cent. All of the December increase occurred at furnace plants, where a rise of 7.6 per cent in average daily output was reported; at merchant plants the daily rate declined 2.4 per cent.

Production of beehive coke declined sharply, the average daily production for the month being 7.6 per cent less than that of November.

Stocks of coke at furnace plants increased 4.4 per cent, while those at merchant plants decreased 3.1 per cent. At the rate of production in December, total by-product stocks were sufficient to last 43.8 days, in comparison with 45.2 days' supply at the close of November.

Bethlehem Issues Booklet on Light Sections

AN attractive 16-page booklet has been issued by Bethlehem Steel Co. illustrating and describing the light beams, columns, joists and stanchions made by the company. Illustrations are given of typical applications and nominal weights and dimensions are listed.

British Prices, f.o.b. United Kingdom Ports

Per Gross Ton

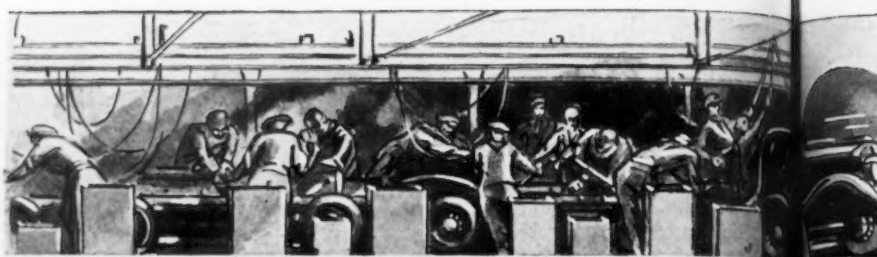
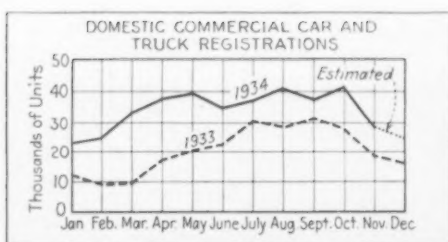
Ferromanganese, export	\$9		
Billets, open-hearth	\$5 10s.	to	\$5 15s.
Tin plate, per base box	*18s.	2d. to	18s. 9d.
Steel bars, open-hearth	\$7 17½s.		
Beams, open-hearth	\$7 7½s.		
Channels, open-hearth	\$7 12½s.		
Angles, open-hearth	\$7 7½s.		
Black sheets, No. 24 gage	\$9 5s.		
Galvanized sheets, No. 24 gage	\$11 5s.		

*To May 1: 18s. 5d. to 19s. thereafter.

Official Continental Prices, f.o.b. Continental Ports

Per Metric Ton, Gold £

Current dollar equivalent is ascertained by multiplying gold pound price by 124.14 to obtain franc equivalent and then converting at present rate of dollar-franc exchange			
Billets, Thomas	\$2 7s.		
Wire rods, No. 5	\$4 10s.		
Steel bars, merchant	\$3 5s.		
Sheet bars	\$2 8s.		
Plate, ¼ in. and up	\$4		
Plate, 3/16 in. and 5 mm.	\$4 2s. 6d.		
Sheets, ¼ in.	\$4 7s. 6d.		
Beams, Thomas	\$3 2s. 6d.		
Angles (Basic)	\$3 2s. 6d.		
Hoops and strip base	\$4 2s. 6d.		
Wire, plain, No. 8	\$5 7s. 6d.		
Wire nails	\$5 15s.		
Wire, barbed, 4-pt. No. 10	\$3 15s.		



THIS WEEK ON THE A

Car Output Continues to Increase As First Labor Outbreak Occurs

DETROIT, Feb. 5.

WITH automotive production speeding along at better than a 300,000 units a month gait, all that stands in the way of further expansion of motor car assemblies this month and next is sporadic labor trouble. Barring serious strike tie-ups, the industry should make close to 200,000 units in the next three months. This means that, in the January-April period, approximately 1,475,000 cars will come off assembly lines, compared with 1,122,640 cars in the same months of 1934, a gain of 31 per cent.

The first labor strife since 1935 production started descended on the industry during the past week. A flare-up occurred in an unexpected spot last Thursday when, without warning, 46 wet sanders at the Fisher Body plant in Lansing walked out and caused the closing of Oldsmobile as well as Fisher. Operations were resumed the next day and continued on Saturday to make up lost time. This constituted the first automotive labor outbreak in Lansing. At the same time 150 men employed in the maintenance department of Murray Corp. in Detroit made impossible demands on the management and quit work when the latter refused to comply.

New Models in Fall

Agreement of automobile manufacturers to make October the focal month for new model introductions is the result of a study made for NRA by the Automobile Manufacturers' Association in 1933. The experience of companies which have brought out new cars in the early fall proves that the plan will help substantially in reducing

the industry's seasonal curve. It was discovered, for example, that in the five-year period, 1928-1932 inclusive, the makers announcing in the fall did almost 5 per cent of their yearly average business in the poorest month, whereas the January announcers did only 3.8 per cent. During the peak month the proportion of the fall announcers was 12 per cent and of the January announcers 14 per cent.

These figures don't tell the whole story, however. The public, realizing that many companies offer new cars in December and January, has held off buying in November and December, thereby effectively stopping sales of cars introduced in the fall. This tendency on the part of car owners to postpone purchases late in the year has made the fall announcers hesitant about stocking cars or even car parts because some new model of another manufacturer might outmode their styles. Under the plan agreed to by car makers to introduce all new models within a period of 60 days before or after Oct. 1, this brake on retail sales during November and December would be released, flattening out the sales curve.

Steel to Gain from Fall Introductions

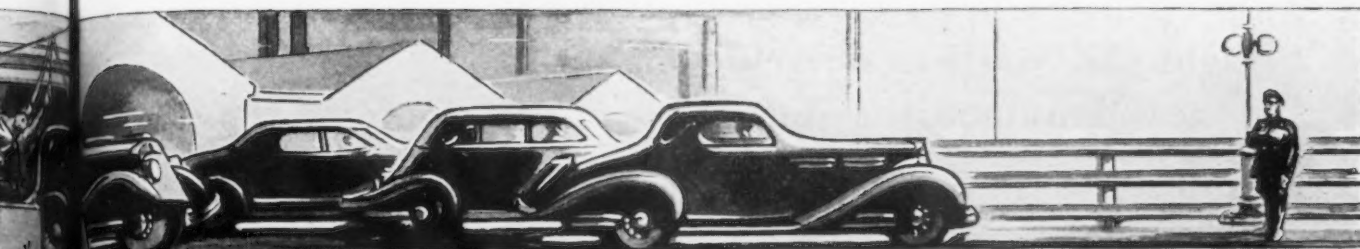
With new model introductions scheduled for August, September, October and November rather than at the year end, changes of far-reaching significance are likely to take place. Manufacture of parts will begin earlier than in previous years and steel tonnage should be greatly stimulated at a time of year when demand usually lags. The fact that the fall announcement plan will become effective

this year makes the industry's outlook for 1935 even happier than it has been. Car manufacturers will get the full benefit of the seasonal rise in the spring and the normal carry-over during the summer, with the assurance of a revival of buying on a sizable scale when 1936 cars are unfolded for public inspection in the fall.

In all of these calculations, of course, one unknown quantity has been left out. Ford is not a member of the Automobile Manufacturers' Association and through the years has played a lone hand. No word has been uttered at Dearborn to indicate Henry and Edsel Ford's attitude toward the proposal. It is pointed out, however, that the Ford Motor Co. has complied in every respect with the NRA code without having signed it. It is freely admitted that in view of Ford's key position in the industry it is necessary to have its cooperation if fall introductions are to be successful in accomplishing production stabilization.

Buick and Cadillac Buy Equipment

The first companies committed to early fall announcements this year are Buick and Cadillac. Both had decided on returning to their former practice of new model introductions at that time before the Automobile Manufacturers' Association and the White House had come to an agreement on the new fall program. Buick already has placed orders for milling, drilling, tapping and boring equipment. Some of the orders call for new machines and others for the rebuilding of existing machinery. Total purchases, roughly estimated at \$300,000, are expected to be completed this week.



THE ASSEMBLY LINE

Cadillac, said to be designing a new V-eight motor which will have the cylinder block and crankcase cast integrally, has bought some equipment for machining the new block and may buy more in the next few days. Its expenditures probably will run \$150,000 to \$200,000. Lincoln, preparing for manufacture of a light V-twelve, will buy shortly at least a small amount of equipment and will have some machinery rebuilt for the new job.

Ford has sent an official to Japan presumably to investigate the desirability of making in that country some of the parts for its Japanese-assembled car rather than of importing them from Dearborn. If it is determined that production costs in Japan would be much lower than under the present set-up, equipment probably will be bought in this country and shipped to Japan to manufacture parts there. However, a decision on this matter is months away, since the official will not return to Rouge until April. A few inquiries, apparently hooked in with the prospective program, have been received by American machine tool builders from Ford's plant in Japan.

Car Makers Ask Mills for April Rollings

As deliveries of steel and parts lengthen, car manufacturers are bringing pressure on steel mills to get April rollings scheduled so that they will be assured of an adequate stock of steel in April and May. But the steel people reply that they are not permitted under their code to take second quarter bookings until March 1. Sheet mills specializing in automotive requirements are sold out for the first quarter. In some cases cold-rolled strip mills have benefited from overflow tonnage in that steel users who have been buying wide sheets and slitting them are no longer able to get satisfactory deliveries from sheet mills. Parts

By BURNHAM FINNEY

Detroit Editor, The Iron Age

• • •

makers report that releases are being received from car builders 30 days ahead whereas, usually, the latter have not anticipated their needs more than 10 days in advance.

Retail demand is continuing surprisingly good, although storms in the East interfered with deliveries in the last 10 days. From 40 to 65 per cent of cars produced by the factories are going directly into customers' hands. In the week ended Jan. 26 Plymouth dealers, for example, delivered 5453 cars and the factory shipped 9201. Plymouth dealers sold 20,101 cars in the first four weeks of January, while assemblies at the local plant were more than 40,000 units.

Pontiac's retail sales last month are understood to have been more than 7000 units and factory output 13,500. Only about 2500 of the cars made in January were standard sixes, which Pontiac expects to account for 50 per cent of its 1935 volume. The other 50 per cent should be divided about equally between the de luxe six and the eight. Pontiac is reported operating three shifts in an effort to get out standard sixes which are just beginning to be displayed around the country. Fisher Body's Pontiac plant, incidentally, is one of the busiest spots in the industry. It not only is making Pontiac bodies, but also is stamping parts for Olds bodies which are trucked to the Fisher plant at Lansing for assembly.

Steel Furnaces at Capacity

The Ford Motor Co. is operating all nine of its open-hearths and Great Lakes Steel Corp., all eight of its furnaces. With more finishing capacity than raw steel capac-

ity, the latter has so eaten into its bank of ingots built up in the fall that it has been compelled to purchase a round tonnage of sheet bars in the open market.

Ford's output at Rouge, where approximately 70,000 men are currently employed, is near 6000 units a day. The production rate is expected to rise to more than 8000 a day in March, during which Ford is reported to be aiming at the assembly of 180,000 units.

The main brake holding back Ford expansion is said to have been trouble in connection with certain press operations in the body division at Rouge, but Monday Briggs began delivering two-door sedan bodies to supplement those being built by Ford.

Chrysler Corp. is understood to have scheduled 80,000 cars for each of the next three months, with Plymouth furnishing considerably more than half the total. Pontiac has 18,000 cars projected for February and Oldsmobile 15,000. Chevrolet, slower than its competitors in getting started, is said to have made little more than 50,000 jobs in January, with 75,000 set up for this month. Packard will build the first 2000 units of its 120 model in February, with 5000 cars the goal in March and 4500 in April.

Reflecting the increased purchasing power in the busiest industrial spot in the country today, Detroit's automobile sales in January, at 5438 units, were the largest on record for the month, even exceeding the 5313 cars sold in January, 1929.

Since car manufacturers will want to make 1935 models as long as possible in order to keep down tool and die costs per unit, it is thought that they will introduce most 1936 cars in November rather than earlier, since they have until Nov. 30 under the agreement with the White House for fall announcements.

MODERNIZATION

Rises Above the Clouds of Obsolescence

to
Light the New Era of Achievement in
Manufacturing Efficiency and Economy

For Small High Speed Work,
Compare Bullard Type "J"
Mult-Au-Matics — "J-7" or
"J-11".

ACCURACY
FLEXIBILITY
SIMPLICITY
ECONOMY

*Time Saved is money earned.
Savings are sometimes possi-
ble where least suspected.*

Learn about Bullard "J" Series
Mult-Au-Matics for 8 or 12 inch
capacities.

SMALL SIZE
HIGH SPEED
WIDE SCOPE
PROFITABLE

Bullard Engineers will gladly
assist in working out advanta-
geous Savings, and will submit
Estimates for your approval.

*The Grasp of
Obsolescence
Has NO Mercy*

*Obsolescence like a
THIEF STEALS PROFITS*

*THE HANDS
of
MODERNIZATION
reveal the Tolls
Obsolescence exacts
from Industry*

THE BULLARD COMPANY

BRIDGEPORT

CONNECTICUT



THIS WEEK IN WASHINGTON

NIRB code employment hearings keep mimeographs working overtime, probably setting new high in word output.

. . .

Extension of automobile code without consulting A. F. of L. brings forth unrestrained invective from William Green, John L. Lewis, et al.

. . .

Continuation of Automobile Labor Board indicates President now places industrial recovery ahead of labor's demands.

. . .

Armco president outlines complete impracticability of introducing 30-hr. week in the steel industry.

. . .

Long awaited Eastman report on coordination of all United States transportation facilities calls for much new legislation.

By L. W. MOFFETT

Resident Washington Editor.

The Iron Age

WASHINGTON, Feb. 5.—A newspaper correspondent, overcome with ennui from covering the NRA hearings on code employment conditions, said he could give a three-word history of NRA. To back up his statement he said: "Madhouse-to-morgue." . . . A feature of the wordy hearing was that many of the addresses were "canned" . . . making it good business, one might assume, for ghost writers without affecting the tin plate market. . . . Said an industrialist: "Organized labor leaders are more afraid of the 30-hr. week than is industry. . . . But it appeals to the 'rank and file,' so—." . . . This industrialist would hand the 30-hr. week to labor. . . . On the theory that the sooner the castor oil is taken the sooner the fever is over. . . . Nevertheless certain industries are drawing up absolutely unconstitutional bills to save themselves from "disaster" in the event NRA

is abolished (which it will not be) and are being roundly criticized by other industries which are not putting their feet in the trough, meaning the treasury. . . .

Renewal of the automobile code without concessions to organized labor touched off fulminations from American Federation of Labor officials that were unusually blistering, even for Washington. . . . "Traitor to the breast that nourished him," roared John L. Lewis, United Mine Workers head, at Donald Richberg, former railroad union attorney and now high in New Deal councils. . . . Even stronger and more or less picturesque phrases were fired at the super-coordinator. . . . It was about as direct a shot as was dared in the direction of the White House. . . . The President's "confirmation" of the Automobile Labor Board, with its proportional plan of representation, especially em-

bittered the A. F. of L. . . . It was not assuaged in the least by the President's statement that the ALB "is my baby". . . . That he did not propose to desert the "baby" even in the face of A. F. of L. efforts to kidnap it was made manifest. . . . To the surprise of those not in on the "know" the President's executive order even went to the extent of carrying an amendment to the code confirming the Automobile Labor Board. . . . Organized labor apparently took this to mean that the President had gone out of the way to "rub it in." . . .

Original copies of the order did not mention the name of the Automobile Labor Board. . . . The order as finally issued from the White House spoke of provisions for settlement of labor controversies "which were established by the Government and have been in operation since March, 1934, and which are hereby confirmed and

continued." . . . This of course refers to the board. . . . The reason for omitting the name may have been to appease organized labor, if that were possible. . . . Referring to the code, President Green of the A. F. of L. told a Senate sub-committee "we will not accept it, recognize it, or yield to it." . . . One wag, having in mind the poor showing organized labor made at elections in the automotive industry and the "demands" of organized labor for a voice in the industry, said "Bill wants someone to sew a coat on his button." . . .

Mr. Green said the code was "imposed" not only upon organized labor, because it was not consulted, but also upon the NIRB, because the latter voted five to two against renewal of the code. . . . Chairman S. Clay Williams and A. D. Whiteside were for renewals. . . . Dr. Leon C. Marshall, Walter Hale Hamilton, Sidney Hillman, Leon Henderson and Blackwell Smith, the latter two ex-officio members, were for an average work week of 40 hours without provision for a 48-hr. peak. . . . The President stood with the minority, indicating the President is the power behind NRA as he is behind other Government alphabetical agencies and Government departments. . . .

The President's action running so sharply counter to organized labor's demands was referred to as the "final break between the White House and the American Federation of Labor." . . . The coolness between the two started when the A. F. of L. aroused White House resentment by impressing upon the latter "demands" made by organized labor at the San Francisco convention. . . . The auto code renewal may, in the opinion of some students, mean a few sporadic strikes in the industry. . . . Threats of a widespread strike not only in that, but in the steel and textile industries, are not taken seriously. . . . Whether the President turned right or left, or went straight ahead, it is realized he is extremely anxious to keep industry going, heading for recovery which must make headway if a revolt of voters is to be prevented. . . . Of course New Dealers say the big thing is that the President insisted upon doing the right thing; that he took a realistic and sound economic view without regard to political repercussions. . . .

For one thing it was held inconceivable that the President would turn upon his own "baby," the Automobile Labor Board, which was not, as many thought, made a part of the code, but is continued

until June 16, 1935, just as the automobile code was continued. . . . The renewal carries as chief changes, plans for reducing seasonal production by providing for introduction of new models in the fall. . . . The other provides for time and one-half pay for overtime in excess of 48 hours. . . . With its small membership in the industry it would seem that organized labor would be pleased at the proportional representation plan. . . . Under its majority representation plan, organized labor would have no voice whatever in the industry. . . .

o o o

W. Ames & Co. Lose Suit

The Supreme Court of the District of Columbia last Friday dismissed a complaint made by W. Ames & Co., Jersey City, N. J., which had filed suit against Government officials to compel purchase of its steel for road work. The company, not a member of the steel code, protested the executive order which requires bidders to file a certificate of compliance with the code authority before bids can be opened. The company maintained it was doing an intrastate business and was entitled to contracts for State road work. The Court, through Justice F. Dickinson Letts, declared that "Congress has the unlimited power to prescribe such rules and regulations as it sees fit regarding the public works of the United States and for work for which its funds are to be expended." The complaint was directed at Secretary of Agriculture Wallace, Thomas H. MacDonald, chief of public roads, and Harold L. Ickes, Public Works Administrator, who were in charge of the Federal money used for road building and allotted and loaned to the States.

o o o

Big Crossing Elimination Outlay Indicated

Whatever else may be done with the \$4,880,000,000 lump sum relief work appropriation sought by the President, it seems highly probable that there will be a large outlay for railroad grade crossing elimination. The American Institute of Steel Construction estimates that 2,000,000 tons of structural material would be needed if the 240,000 hazardous grade crossings were eliminated. The estimated number is taken from the report of the National Resources Board. This report is being used as the chief source for projected work relief.

Rural housing, rural electrification, slum clearance are other im-

portant items included in the plan, if it goes through, as it is expected to do. Opposition, however, to giving the President unrestricted use of such a vast sum may mean modification of the form of control. In the end, however, it will be an Administration administered fund.

Some opponents to the lump sum allocation were disturbed over reports that the money might be used for direct relief for which \$880,000,000 has been earmarked. They drew serious political implications from this report. William Green, president of the American Federation of Labor, said organized labor was disturbed over the provision in the works relief bill for an average "security wage" of \$50 a month. But of course one of Mr. Green's chief purposes in life is to be disturbed.

o o o

National Coal Reserve Proposed

Extensive Government control of the coal industry would become an actuality if Congress enacted into law the recommendations of the Mineral Policy Committee of the National Resource Board. It proposes the purchase by the Government of selected coal acreage as a means of controlling capacity. The national coal reserve would be leased as needed with the paying of a royalty to the United States. The Government would buy and withdraw from production unprofitable coal mines.

It also proposes control of output of oil and other mineral resources through a central supervising agency, and maximum prices would be determined by a cost-finding body. Exports of scrap and of minerals such as would be useful in war—as it happens all minerals are useful in war—would be regulated.

Mere recital of the outlines of this and the torrential volume of other Government reports give a vivid indication of the move toward socialization of industry. There is nevertheless growing support for increased Government regulation of natural resource industries as a means of conservation.

o o o

Waste in Distribution

Recommendations have been made to Secretary Roper by the sub-committee on waste in distribution of the Business Advisory and Planning Council of the Department of Commerce which proposes that a census of population be taken every five years instead of every 10 years as has been the case since 1790. It is doubted that the recommendation will be acted upon.

Industry and Labor at Odds On Code Employment Provisions

WASHINGTON, Feb. 5.—Vigorous condemnation of the 30-hr. week was voiced by industry last week at NRA hearings on employment provisions in code, while equally emphatic support of the shortened week was offered by speakers for the American Federation of Labor.

Reflecting the position of the iron and steel industry, Charles R. Hook, president, American Rolling Mill Co., Middletown, Ohio, said that with operations at 70 per cent, the 30-hr. week would require about 700,000 employees in the industry or nearly twice the present number engaged. Such a condition is unthinkable, he declared, for the reason that no such supply of experienced workers is available in the country. Meanwhile the 30-hr. bill was taken up before the Senate Committee on Judiciary.

Strongly upholding the profit system and urging abandonment of classified wage minima and of further reduction of hours of work, Ralph E. Flanders, president, Jones & Lamson Machine Co., Springfield, Vt., said that demands by organized labor for a 30-hr. week contain a fallacy so obvious as to render its serious consideration by legislation fantastic. Mr. Flanders made a specific suggestion that no maximum hours be set in codes, at least short of 54 hr. per week; that overtime above 40 hr. and less than 50 be set at time and a half and that overtime for 50 hr. or more be made double. Enactment of the 30-hr. bill, he said, would be a death blow to recovery.

Declaring that capital goods offer the most fertile field for re-employment, John W. O'Leary, chairman of the code authority of the Machinery and Allied Products Industry, pointed out that such products have to be sold in order to reengage employees and that prices must be based on cost of production.

"To produce goods at a price which will create demand, an increased volume of production is essential at a unit labor cost which, without reducing the workman's total earnings below a living wage, will result in a price for the product that will make it salable," said Mr. O'Leary.

"To accomplish this result," he continued, "will require, whether we like it or not: (1) The lengthening of the maximum hour period; (2) the creation of working conditions so flexible as to permit the maximum work period to be

realized in actual practice, and (3) a wage at such unit cost for work performed that will permit the sale of the product, the workman in turn having the opportunity to work sufficient hours to make a living wage at such unit cost and the assurance of increasing income as recovery advances."

Disagree on Wage Differentials

Industry and labor not only were at odds on the shortened week and classification of minimum wages, but likewise on wage differentials geographically fixed. Labor wanted such differentials done away with. Industry did not. The latter issue, however, did not come in in connection with discussion of wages in the iron and steel and metal-working fields.

Labor also made the usual demand for representation on all code authorities and increased representation on the NIRB. Wider representation on code authorities is being forced upon some industries by organized labor without the aid of NIRB, although with its approval, after industry boards approve such representation.

Only recently organized labor secured representation on code authorities of the bituminous coal industry through the continued and determined demands of President John L. Lewis of the United Mine Workers, rated by many as the most dynamic labor leader in the United States. At the hearing on employment provisions he insisted even more vigorously than did William Green, president of the American Federation of Labor, on the 30-hr. week, labor representation

on code authorities and increased labor representation on NIRB.

Board Divided

However, there are many who do not think it a matter of importance what the NIRB will recommend, unless given Presidential approval. For the NIRB, itself divided on major policies, may reach only indefinite conclusions, which whipped into recommendations, would not greatly impress Congress when it takes up NRA legislation. Moreover, the NIRB undoubtedly has lost most of its standing. The Blue Eagle resembles a sick bird becoming more anemic day by day. It is conceded that virtually no attempt is being made to adhere to some of the codes. This is especially true of retail and service codes. The task of anything like complete compliance is now realized to be impossible. One purpose of the entire series of hearings on codes was to produce a simplified code structure.

It is additionally clear at each succeeding hearing that neither industry nor labor has anything like the original zeal that sections of each showed for the NRA. Labor was extremely caustic in attacking NRA. Mr. Green told the NIRB that the NRA had failed organized labor. Many industrialists reflected a scarcely veiled dislike. Remarks were heard in corridors that the NRA simply was folding up by reason of its own weight; that it has become so complicated and twisted and developed so much feeling within industry and between industry and labor that it is running out of motive power. Yet the NRA is confidently expected to be continued, even though in simplified form. As it stands now, it is considered by many to be not much more than a debating society, though an expensive one for taxpayers.

Shorter Hours Would Reduce Earnings in Steel

Discussing hour limitations applied to the iron and steel industry, Mr. Hook said that if hours in the steel code were liberalized to provide a 48-hr. averaged maximum work week more business would result. He said he felt "hamstrung" under present rigid hour limitations in the code. Although the code established a maximum 40-hr. week averaged over a six months' period, Mr. Hook said that it has not been possible to "give employees the maximum hours of work permitted under the present

limitations." This is primarily due to the fact that with better than average operations "we must carry a large number of men who are not normally required. Thus, in average or low periods of operations, the available work must be spread over this excess force as well as over the normal present force."

Mr. Hook declared that "increases in the hourly rates of pay and reduction of hours in industry have resulted in the spreading of work to a large number of people, but the tendency has been to place

all workers on a subsistence level with no funds available for those items that maintain and increase our American standard of living."

The only way to get real employment, Mr. Hook said, is to "unfreeze" the capital goods securities market by modifying the restrictions placed upon the lending of capital. "We have to depend upon capital if we are to maintain the American standard of living," he continued.

More Employees Than in 1929

It was pointed out by Mr. Hook that studies by the American Iron and Steel Institute indicate that when the steel industry reaches an average operation of 70 per cent under present codes it will require 524,000 wage employees, or an increase of 176,000 over the number employed in December, 1934, when the industry was operating at 35.5 per cent of capacity, and 104,000 more than were attached to the industry in the boom year of 1929.

He said that the added wage cost, as applied to the approximately 17,500,000 tons of finished steel produced in 1934, would have been \$185,000,000, which the industry would have had to pass on in increased prices or to have suffered unsupportable losses.

"Any such increases in steel prices at this time would surely dampen, if not altogether kill, the recovery now taking place in steel," Mr. Hook declared. "The 30-hr. week would produce an average 24-hr. week in the steel industry. Because of the 40-hr. limitation and the depressed state of the steel markets in 1934, average earnings of steel employees amounted to only \$18.39 weekly, even with hourly rates at a level higher than the average for all

industrial workers. The 30-hr. week would freeze this income at existing levels and deprive steel workers of the opportunity to increase their earnings as business improved."

Mr. Hook stated that "there would simply be a spreading of the work beyond all reasonable limits with wages at subsistence levels and efforts to restore American standards of living to the steel workers completely defeated.

"Even though wages are sufficiently increased to offset the reduction of hours and the actual earnings of our workmen are not impaired," Mr. Hook said, "the resultant increased cost of commodities will reduce their purchasing power and represent a decrease in real earnings."

Minimum Wages Studied

Discussing the question of varying minima for skilled workers, Mr. Hook said it would be almost impossible to develop detailed work sheets for a great number of employees.

Using charts to illustrate his point, Mr. Hook cited a study relating to two years of the application of wage schedules in one of his plants, which covered 25 different rates of pay per hr. for 700 jobs in the plant. The rates started with common labor at 47.5c. and were increased to \$2.25 an hr. for the highest paid skilled workers.

"Examination of the rates for the 25 different classifications arrived at as a result of our study does not indicate any distinctive groups of labor in any part of the entire schedule," Mr. Hook said. "There is no well-defined boundary line between so-called semi-skilled and skilled labor."

Hillman's suggestion that recovery has come since, and, at least partly because of, the National Industrial Recovery Act and other New Deal policies, said that since the act, the pace of recovery had been disturbingly slow and that the process of liquidation of the ails of 1929 came to a climax in 1933, before the act was passed.

Recovery Very Slow

He suggested that "it is necessary to get back into the frame of mind where we believe that profits are possible." He declared he did not want to be put in the position of denying the efficacy of New Deal policies but that he objected to the introduction of "dangerous rigidities" in code structure and administration. He conceded the necessity for rigidity as to minimum wages but not as to maximum wages.

Turning to a discussion of hours, Mr. Hillman said he wanted a shorter week than codes and industry now provide. Mr. Flanders said he refused to discuss any question based on the assumption that the 30-hr., which Mr. Hillman was believed to be proposing, would be a practicable work week. Saying that it could be assumed that workers represented the majority of those concerned with industry, Mr. Hillman asked whether a minority was not bound "to go along with the majority if the majority wants to try a shorter work week.

"We have already had the greatest shortening of hours and the greatest increase in wages in the history of any recovery," said Mr. Flanders.

Rates for Overtime

Mr. Henderson inquired of Mr. Flanders whether he would expect his proposal as to hours of work with a basic 40 hr. at regular pay and time and one-half and double time for overtime would result principally in stabilization of employment through better management or in the payment of overtime to a greater number of workers. Mr. Flanders said it would bring higher overtime pay to many workers, supplementing a statement in his prepared manuscript that it would "effect an automatic spreading of employment in dull times."

Mr. Flanders told Mr. Henderson it would force a diffusion of employment, but beyond that, it would force an increase in overtime pay. He pointed out that most of the apparent increase in efficiency has been caused by industry's use of its best machinery and its best men and had not been a "real increase." He said some industries

Machinery Industry Has Able Spokesmen

Mr. Flanders, who appeared as a member of the NRA Industrial Advisory Board, said he believed that rigidities in the economic system should be "subject to great suspicion" and that most of them were harmful. Replying to a question by Mr. Hillman as to whether he believed in price fixing, Mr. Flanders explained that his industry has open price filing and that it seems to have operated to standardize competition though not to the disadvantage of the buyer. He suggested that "it is the Government's business, perhaps, to see that open price filing does not become price fixing."

"You are not so certain that trade practice rigidities should be eliminated?" inquired Mr. Hillman.

Mr. Flanders, declining to make specific statements on general premises, said he was not certain that all should be eliminated.

"Then why," Mr. Hillman asked, are you so certain that any rigidities that would give protection to labor would bring us to disaster?"

"One large piece of evidence," Mr. Flanders replied, "is the unsatisfactoriness of recovery at the present moment." He added he is opposed to rigidities introduced by industry as well as by labor.

Mr. Flanders, replying to Mr.

show real increases but that it is dangerous and fallacious to extend the experience of a few industries to the whole body of industry. He agreed with Mr. Henderson that great advances have been achieved in machine design.

"A great volume of improved technique has been withheld from the production line by the lack of purchasers," said Mr. Flanders.

Mr. Henderson asked whether he thought the 40-hr. week would permit industry to expand production and utilize new techniques.

"At 40 there is a chance," said Mr. Flanders. "I hope 40 is right. It may be distasteful, unless there is flexible provision for overtime."

Upon inquiry as to whether he would apply his proposal to the peak and seasonal overtime periods, permitted in many codes, to emer-

gency maintenance and repair exemptions now in effect, and to all other "accepted exemptions from existing maximum hours provisions," Mr. Flanders said that as a matter of general policy, subject to administrative change to meet the demands of a particular instance, he believed industry could care for extraordinary necessities under a provision for overtime pay above 40 hr.

"The air clears and the problem simplifies," said Mr. Flanders, "when we remember that a recovery, to be real, must be expressed in terms of an increase in the production and distribution of goods and services. A further shortening of hours cannot possibly produce such an increase. A further shortening would obviously produce a decrease."

mendations (1), (2), (5) and (6), except that two commissioners do not concur in (6) (c). The commission expresses no opinion on (4). All but Commissioner Miller disapprove (3).

Seek Control of Amalgamated Union

PITTSBURGH, Feb. 5.—Control of the Amalgamated Association of Iron, Steel & Tin Workers apparently is the goal of a militant drive of about 500 steel workers and more than 100 coal miners, who convened at Pittsburgh Sunday. William J. Spang of Duquesne, Pa., presided as chairman of the group.

The Amalgamated Association of Iron, Steel & Tin Workers did not officially recognize the meeting, and Michael F. Tighe, president of the association, threatened to expel all members of the union who were present at the meeting. The United Mine Workers of America also had outlawed the meeting. Mr. Tighe and John L. Lewis, president of United Mine Workers, as well as William Green, president of the American Federation of Labor, were denounced by several speakers.

A ten-point program for a national campaign to organize the steel industry was drawn. The program included a proposed demand for a minimum wage of \$1 an hour with a 5-day, 30-hr. week, in the steel industry.

Employees' Share Of Steel Dollar

EMPLOYEES received a larger share of the steel industry's gross sales dollar during the depression than they did in 1929 when both total production and aggregate payrolls were at their peace-time peak, according to the American Iron and Steel Institute. Employees directly and indirectly required in steel production received in salaries and wages 43c. out of every dollar realized from gross sales from 1930 through 1933. In 1929, the employee's share was 37c., and in 1918 only 34c. out of every sales dollar went into payrolls.

The Chicago section of the American Foundrymen's Association will hold its second annual dinner dance Friday, Feb. 15, at 7.30 p. m., at the Swedish Club.

Coordination of Entire Transportation System Called for by Eastman

WASHINGTON, Feb. 5.—"A system of transportation for the nation which will supply the most efficient means of transport and furnish service as cheaply as is consistent with fair treatment of labor and with earnings which will support adequate credit and the ability to expand as need develops and to take advantage of all improvements in the art," is the ultimate objective of a report submitted to the President and the Congress last week by Joseph B. Eastman, Federal Coordinator of Transportation. "This system of transportation must be in the hands of reliable and responsible operators whose charges for service will be known, dependable, and reasonable and free from unjust discrimination."

Three general methods are suggested by which the Federal Government can accomplish this objective. One follows conservative lines of thought, with main reliance on private capital and enterprise; the second is bolder and involves a use of Governmental power to compel a very radical change in railroad conditions, but still preserves the principle of private ownership; the third departs from this principle and makes railroad transportation a direct function of the Government.

The report undertakes to show what can be done under each of these general methods, to determine which is preferable, and to

work out the details of the one chosen.

Specifically, the report suggests the following legislation to the Congress:

1. A bill for the Federal regulation of water carriers and wharfers, in both interstate and foreign commerce, by the Interstate Commerce Commission.
2. A bill for the Federal regulation of highway motor carriers and brokers by the Interstate Commerce Commission.
3. A bill for the reorganization of the Interstate Commerce Commission, including the establishment of a Coordinator of Transportation.
4. A bill providing dismissal compensation for railroad employees displaced through coordination projects.
5. A bill for the revision of section 77 of the Bankruptcy Act, relating to railroad bankruptcies and reorganizations.
6. Four bills amending the Interstate Commerce Act: (a). To enable the commission to prescribe minimum as well as maximum joint rail-water rates, and to establish through railroad routes regardless of the "short-hauling" of any carrier; (b). To include ports and gateways in the protection of section 3 against undue preference or prejudice; (c). To restore section 4 to substantially the form which it had prior to 1920; (d). To limit further the right to reparation for damages due to violations of the act.

The commission indorses recom-

Fall Introduction of New Automobile Models Considered Logical Move

DETROIT, Feb. 5.—In agreeing to introduce new models in the late summer and fall instead of at the end of the year, car manufacturers are believed to have taken the most logical and practical step toward stabilization of production and employment. For the reason that it would be inadvisable for the entire industry to try to crowd its tooling-up programs into a single month, automobile companies are to be permitted under the agreement to announce new cars during a period extending 60 days before and after Oct. 1.

Before it consented to adopt the new plan, the Automobile Manufacturers Association had considered several proposals and discarded them because they were not thought feasible. Lower prices in winter months was suggested, with a raising of the price level in the spring, when the usual seasonal demand is felt. Dealers have found, however, that tampering with price schedules has an unsettling effect on the retail market. Manufacturers had the misfortune of finding out for themselves last April what unsatisfactory consequences can arise from an advance of prices in the spring. A sliding scale of prices according to the time of year, say automobile makers, would encourage every retail buyer to engage in "horse-trading" and try to get rock-bottom prices, no matter whether he be in the market in November or May.

The stocking of finished cars isn't practicable. Independent manufacturers haven't the capital or facilities to do it. Those with the resources to stock cars have discovered from bitter experience that it often is disastrous. Customers are finicky about colors, body styles and equipment; their tastes are impossible to predict. That is why companies like Chevrolet revise their sales forecasts and in turn their production schedules every 10 days or so. Inaccuracy of forecasting leads to slow sales and costly liquidation of stocks, with the result that output and employment suffer.

Parts All Ready Stocked

The program of stocking parts ahead has already been adopted by General Motors divisions at Dayton, Ohio, which make not only

motor car parts but also electric refrigerator parts. In the final quarter of 1934 the four divisions in that city—Inland Mfg. Co., Delco Products, Frigidaire Corp. and Moraine Products—built products far in excess of sales needs at the time and leased additional warehouse space to house the largest inventories in their history. This program is providing greater continuity of employment and larger annual incomes for factory workers, as well as benefiting scores of manufacturers selling

materials to these General Motors divisions.

With the shift in new model announcements to the fall, Detroit is likely to be the scene of a national automobile show in October designed principally for dealers, but to which the public may be admitted on certain days. This show would coincide with the convention of the National Automobile Dealers Association. The New York and Chicago shows, as well as the numerous local shows throughout the country, probably would be held at about the same time as in the past. Since the models to be displayed at these shows would already have been seen for some weeks in dealers' showrooms, measures would be taken to provide extra attractions to "pull in" the public.

A. F. of L. Drops to Fourth Place In Automobile Plant Votes

DETROIT, Feb. 5.—The American Federation of Labor lost more ground during the past week in the impartial poll of workers' sentiments being taken by the Automobile Labor Board in Detroit motor car plants. As a result of the vote in the factory of the Hudson Motor Car Co., the Associated Automobile Workers of America went into third place in ranking in the total vote in the industry to date, the federation dropping to fourth place.

In the elections held during the last two weeks there has been no shift from the general sentiment on the part of an overwhelming majority of workers to keep aloof from any union or employees' association. Out of 53,771 ballots cast, 40,953 workers have named no labor affiliation. This is 76.1 per cent of the total. Employees' associations were designated as a preference by 5440 workers, or 10.11 per cent. The Associated Automobile Workers secured 3124 votes, or 5.8 per cent. Only 2286 employees indicated their affiliation with the A. F. of L. This number represented 4.25 per cent of the total votes.

Over 90 per cent of the 60,000 workers eligible to vote participated in the Detroit elections. The Associated Automobile Workers, made up largely of former members of the A. F. of L. who left the latter in a body last summer, was the first union to urge its followers to take an active part in the plant elections. Its strength is concentrated in the Hudson

plant. In the Hudson primary election it received 2858 out of a total of 7560 votes cast, but nominated only 36 candidates because of the grouping of its votes in a few departments. The Hudson Industrial Association, on the other hand, received 2732 votes and nominated 57 candidates. The unaffiliated vote was 1781.

For weeks before the A. F. of L. officially repudiated the Automobile Labor Board, it issued from its Detroit office reams of publicity attacking Dr. Leo Wolman, chairman of the board, and Richard Byrd, its labor member. Ever since the federation started its membership campaign in the Detroit district in June, 1933, it has carefully avoided any action which might give an inkling of its actual strength. When it asked the Automobile Labor Board to hold plant elections, it assumed that workers would have a clear-cut issue of A. F. of L. as against a company union. It was a shock, therefore, to federation leaders when Dr. Wolman announced that workers would have a chance to indicate no labor affiliations in elections.

With the federation's poor performance in the plant elections in mind, one might wonder why it still is insistent on majority rule. The point is that in majority rule the federation presumes that the worker would be given a choice between only two agencies to do his bargaining for him—the federation or a company union. In such elections it is assumed that many workers would vote for the

(CONTINUED ON PAGE 67)

PERSONALS

EDGAR C. BAIN, since 1928 metallurgist for the United States Steel Corp., has been appointed assistant to vice-president in charge of metallurgy and research, with offices at 71 Broadway, New York. Mr. Bain received the degrees of master of science and chemical engineer from Ohio State University and for a time taught at that institution. After teaching at the University of Wisconsin for a short time and after serving the B. F. Goodrich Co., he joined the chemical warfare service during the war. He was subsequently associated with Dr. Zay Jeffries at the Cleveland wire division of the General Electric Co., and from 1922 to 1924 he was a research metallurgist at the Atlas Steel Co. (now Ludlum Steel Co.). During the next four years he occupied a similar position at the Union Carbide & Carbon Corp. Research Laboratories, after which he joined the research laboratory of the corporation. Mr. Bain was one of the pioneers in the utilization of X-rays in metal study, and has been the recipient of both the Howe and Hunt memorial medals.

W. C. BUCHANAN, general manager, Keystone Steel & Wire Co., Peoria, Ill., was honored by the employees of the company and their families, Feb. 4, when he was presented with a plaque by the Keystone Employees' Association. The plaque was signed by the association's officers, as well as by officers and directors of the company. Presentation was made at a gathering in the Shrine Temple at Peoria, which included more than 3000 persons. Mr. Buchanan went with the Keystone company

five years ago, and was made general manager shortly thereafter. The organization's relative prosperity during the period of the depression is attributed largely to his leadership.

♦ ♦ ♦

C. F. HOOD, manager of the Worcester, Mass., district of American Steel & Wire Co., has been appointed vice-president in charge of operations, with headquarters in Cleveland, succeeding J. L. Perry, who recently was named president of the Tennessee Coal & Railroad Co., Birmingham. Mr. Hood became connected with the company at Worcester early in 1917 but in June of that year joined the army and served overseas during the World War. Shortly after his discharge in April, 1919, he returned to the Worcester plant as department foreman in the electrical cable works and in 1925 was made assistant superintendent of the South works, Worcester. He became superintendent of the South works in 1927 and in 1928 was made assistant manager of the Worcester district. In 1933 he became manager of the Worcester district. C. I. COLLINS, who is now superintendent of the Cuyahoga works, Cleveland, has succeeded Mr. Hood as manager of the Worcester district. B. H. GEDGE, for many years assistant superintendent of the Cuyahoga works, has succeeded Mr. Collins as superintendent. These appointments are effective immediately.

♦ ♦ ♦

M. E. JOHNSON, New York district sales manager of the Pittsburgh Steel Co., has been made manager of export sales with head-

quarters at New York. He began with the company in 1902, engaging in sales executive capacities until 1915. From 1915 until 1924 he was assistant general manager of sales in charge of exports at New York, and since 1924 has been district sales manager there. DAVID F. MANN, district sales manager of the Chicago office, has been appointed district sales manager at New York to succeed Mr. Johnson. Mr. Mann started with the company in 1913. In 1917 he became sales agent at Pittsburgh, and in 1923 he was appointed manager of the Chicago office. EDWIN V. RECKLEY has succeeded Mr. Mann as district sales manager of the Chicago office. Mr. Reckley started with the company in 1912 in the advertising department, and from 1918 to 1928 was engaged in sales work. From 1928 to 1931 he was assistant manager at Chicago, and since that time has been sales agent in the Pittsburgh office.

♦ ♦ ♦

E. L. McNAMARA has been appointed assistant manager of roll and steel castings division for the United Engineering & Foundry Co., with headquarters at Youngstown. He joined the United company as roll salesman in the Youngstown district in 1928. Earlier in his career he had been associated with the Deforest Sheet & Tin Plate Co., Niles, Ohio, as traffic manager and partly in sales work. He became purchasing agent and traffic manager of the Falcon Steel Co. in 1919, which position he held until he joined the United Company in 1928.

♦ ♦ ♦

JOHN L. CAMPBELL, since July, 1933, associated with the roll sales department of the Ohio Steel Foundry Co., Lima, Ohio, has been made manager of roll sales. He was formerly with the Hubbard division of the Continental Roll & Steel Foundry Co.

♦ ♦ ♦

THOMAS H. DOOLING, for nearly 10 years manager of the Boston branch of the Electric Storage Battery Co., Philadelphia, has left the East to take up new duties as manager of the San Francisco branch of the company.

♦ ♦ ♦

WILLIAM HARRY JONES, who has been identified since 1929 with the Youngstown Sheet & Tube Co., Youngstown, as assistant superintendent of the finishing department and later as assistant superintendent of the seamless tube mills, has been appointed superintendent of the seamless tube mills. Mr. Jones is a native of South (CONCLUDED ON PAGE 70)



E. C. BAIN



W. C. BUCHANAN



C. F. HOOD

January Pig Iron Producing Rate Up Nearly 44 Per Cent

PRODUCTION of coke pig iron in January totaled 1,477,336 gross tons, compared with 1,027,622 tons in December. The daily rate in January, at 47,656 tons, increased 43.8 per cent over the December rate of 33,149 tons a day.

There were 89 furnaces in blast on Feb. 1, making iron at the rate of 54,410 tons a day, against 69 furnaces on Jan. 1, operating at the rate of 37,615 tons a day. Twenty-four furnaces were blown in during the month, of which 10 were Steel Corporation units, 13 were independent steel company furnaces, and one was a merchant stack. Four furnaces were blown out or banked, two of which were Steel Corporation stacks and two independent steel company furnaces.

Among the furnaces blown in were the following: Two Edgar Thomson, one Ohio, one Farrell, Carnegie Steel Co.; one Monongahela, one Ohio, National Tube Co.; two South Chicago (old) and two Gary, Illinois Steel Co.; one Lackawanna, two Cambria, Bethlehem Steel Co.; one Aliquippa and two Eliza, Jones & Laughlin Steel Corp.; one Ashland, American Rolling Mill Co.; two Haselton, Republic Steel Corp.; one Shenango, Shenango Furnace Co.; one Riverside, Wheeling Steel Corp.; one Zug, National Steel Corp.; one Otis, Otis Steel Co., and one River, Corrigan, McKinney Steel Co.

Furnaces blown out or banked included: one Norton, American Rolling Mill Co.; one Ford furnace, and one Ensley and one Fairfield furnace of the Tennessee Coal, Iron & Railroad Co.

Production by Districts and Coke Furnaces in Blast

Furnaces	Production (Gross Tons)		February 1		January 1	
	January (31 Days)	December (31 Days)	Number in Blast	Operating Rate, Tons a Day	Number in Blast	Operating Rate, Tons a Day
New York:						
Buffalo	90,260	59,340	5	3,185	4	2,340
Other New York and Mass.	2,715	2,715	0	....	0	....
Pennsylvania:						
Lehigh Valley	24,980	25,344	2	805	2	795
Schuylkill Valley .....	....	....	0	....	0	....
Susquehanna and Lebanon Valleys .....	....	2,163	0	....	0	....
Ferromanganese .....	....	....	0	....	0	....
Pittsburgh District	277,461	171,789	18	11,160	12	6,625
Ferro. and Spiegel	5,008	4,563	1	160	1	145
Shenango Valley	25,880	17,587	3	1,405	1	565
Western Pennsylvania	41,870	17,439	2	1,420	1	565
Ferro. and Spiegel	5,040	....	1	210	0	....
Maryland	71,182	45,935	3	2,295	3	2,085
Wheeling District	102,905	77,488	5	4,315	4	2,835
Ohio:						
Mahoning Valley	183,781	101,291	10	6,365	7	3,940
Central and Northern	177,842	122,929	11	6,750	8	4,325
Southern	37,387	35,688	3	1,205	3	1,150
Illinois and Indiana	273,269	203,317	15	10,805	11	7,490
Mich. and Minn.	50,500	45,418	3	1,540	3	1,465
Colo., Mo. and Utah	20,676	15,370	2	665	2	590
The South:						
Virginia .....	....	....	0	....	0	....
Kentucky	19,757	12,867	1	360	1	415
Alabama	69,538	66,379	4	1,765	6	2,285
Ferromanganese .....	....	....	0	....	0	....
Tennessee .....	....	....	0	....	0	....
Total	1,477,336	1,027,622	89	54,410	69	37,615

Daily Average Production of Coke Pig Iron

	Gross Tons			
	1935	1934	1933	1932
January	47,656	39,201	18,348	31,380
February	45,131	19,798	33,251
March	52,243	17,484	31,201
April	57,561	20,787	28,430
May	65,900	28,621	25,276
June	64,338	42,166	20,935
½ year	54,134	24,536	28,412
July	39,510	57,821	18,461
August	34,012	59,142	17,115
September	29,935	50,742	19,753
October	30,679	43,754	20,800
November	31,898	36,174	21,042
December	33,149	38,131	17,615
Year	43,592	36,199	23,733

Production of Coke Pig Iron and Ferromanganese

	Gross Tons Pig Iron*		Ferromanganese†	
	1935	1934	1935	1934
January	1,477,336	1,215,226	10,048	11,703
February	1,263,673	....	10,818
March	1,619,534	....	17,605
April	1,726,851	....	15,418
May	2,042,896	....	10,001
June	1,930,133	....	10,097
½ year	9,798,313	....	75,642
July	1,224,826	....	10,188
August	1,054,382	....	8,733
September	898,043	....	7,100
October	851,062	....	9,830
November	856,940	....	8,134
December	1,027,622	....	4,563
Year	15,911,188	....	124,190

*These totals do not include charcoal pig iron. The 1933 production of this iron was 32,941 gross tons.
†Included in pig iron figures.

Merchant Iron Made, Daily Rate

	Tons			
	1935	1934	1933	1932
January	3,926	7,800	2,602	6,256
February	7,071	2,863	7,251
March	7,197	2,412	7,157
April	8,838	1,908	5,287
May	9,099	3,129	4,658
June	9,499	4,088	6,090
July	7,880	6,783	3,329
August	6,043	7,756	3,070
September	4,986	10,034	3,213
October	5,765	8,634	4,286
November	6,610	7,639	4,435
December	4,399	8,358	3,674

Will Build 37 Coke Ovens at Camden

THE Public Service Electric & Gas Co. of New Jersey, a subsidiary of the Public Service Corp. of New Jersey, has awarded a contract to the Koppers Construction Co. for an addition to its Camden, N. J., gas plant. The addition will practically double the capacity of the plant.

The contract provides for the construction of 37 by-product coke ovens of the Becker type. These will have a daily capacity of 600 tons of coal and will produce, in addition to gas, coke, tar, ammonium sulphate and other products. The contract provides for the first large installation of by-product coke ovens in several years.

The order just received will make a total of 10,684 Koppers by-product coke ovens installed in the United States. This will be more than 90 per cent of all the by-product ovens in use in this country.

SUMMARY OF THIS WEEK'S BUSINESS

Steel Output Reaches 56½ Per Cent And Decline in Scrap Is Checked

Present Operations Expected to Be Maintained in Absence of
Labor Troubles—Detroit Producer Buys Semi-Finished Steel

STEEL production has registered another gain, rising from 56 to 56½ per cent of capacity, and scrap prices, though manifesting mixed tendencies, are on the average stronger than in recent weeks.

The Pittsburgh ingot rate is up three points to 45 per cent of capacity and operations in the Cleveland-Lorain district have advanced two points to 69 per cent. In the Valleys the falling in of several open-hearths has resulted in a temporary recession of two points to 61 per cent. Elsewhere production is substantially unchanged. At Detroit, where output is at 100 per cent of capacity, one producer has so depleted its bank of ingots that it has been compelled to buy a round tonnage of semi-finished steel in the open market.

Though additional increases in production are looked for in certain centers, notably Chicago and the Valleys, there are indications that the upswing in mill operations is losing momentum. Mills producing automobile steels are now operating virtually at capacity and, though tin mill output has risen to 75 per cent and steel demand from miscellaneous sources is showing a steady growth, further significant expansion in raw steel production is believed to be dependent on bookings of railroad steel, construction material and pipe which have been laggards in the recent buying movement.

WHILE output may soon level off, no early recession is looked for. In fact, steel makers are now predicting that the present rate will be maintained well through the current quarter provided there are no serious labor disturbances. They also point out that, with four or five months of operations at current levels, activity would spread to other lines. Even now expansion in miscellaneous lines has assumed sizable proportions. A number of tractor plants in the Middle West have bookings warranting capacity operations for the next six months. Farm implement makers have the best prospects since 1930. Agricultural demand for sheets and wire products has shown notable improvement. Stove manufacturers are running at a high rate. These and other non-automotive outlets for steel are estimated to have accounted for 35 to 50 per cent of the bulge in demand which has developed in the past two months.

The labor outlook has been brightened by the settlement of the Pittsburgh Plate Glass Co. strike and by the results of employee elections in automobile plants.

The gold clause case has checked iron and steel demand in certain districts, though it has not affected the buying policy of the motor car industry. With makers of cold-finished sheets booked full for this quarter, automobile manufacturers are pressing for contracts for second quarter, though under the code prices for that period cannot be filed until Feb. 20.

THE confidence of the iron and steel industry in sustained operations is indicated by the record-breaking gain in pig iron output in January. Total production for the month was 1,477,336 tons, compared with 1,027,622 tons in December. The daily rate, at 47,656 tons, showed an increase of 43.8 per cent over the December average of 33,149 tons. Eighty-nine furnaces were in blast Feb. 1, a net gain of 20 over Jan. 1. January, 1920, showed a net gain of 28 furnaces but the increase in daily rate was only 14.5 per cent. In January, 1925, there was a net increase of 23 furnaces, but the daily average rose only 12 per cent over the previous month.

A Japanese importing house is inquiring for 50,000 tons of pig iron. The Reading Iron Co. has bought 2000 tons and will buy 5000 tons additional over the rest of the quarter.

Rail orders placed by the Southern Pacific, the Burlington and the Wheeling & Lake Erie total 44,374 tons.

STRUCTURAL steel awards of 16,600 tons are the largest with one exception since the last week of November. New projects of 16,150 tons compare with 9400 tons in the previous week and 16,150 tons a fortnight ago. Sheet steel piling inquiries total 6300 tons. Tentative barge work in the Chicago district calls for 15,000 tons of plates.

The reciprocal tariff agreement between the United States and Brazil, yet to be ratified, is reported to call for a reduction of 50 per cent to ½c. a lb. in the duty on manganese ore.

Significant changes in iron and steel prices for the coming quarter are considered unlikely. THE IRON AGE composite prices for pig iron and finished steel are unchanged at \$17.90 a ton and 2.124c. a lb. respectively. The scrap composite remains at \$12.17 a ton for the second week.

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron	Feb. 5, 1935	Jan. 29, 1935	Jan. 8, 1935	Feb. 6, 1934
<i>Per Gross Ton:</i>				
No. 2 fdy., Philadelphia.....	\$20.26	\$20.26	\$20.26	\$19.26
No. 2, Valley furnace.....	18.50	18.50	18.50	17.50
No. 2 Southern, Cin'ti.....	19.13	19.13	19.13	18.13
No. 2, Birmingham†.....	14.50	14.50	14.50	13.50
No. 2 foundry, Chicago*.....	18.50	18.50	18.50	17.50
Basic, del'd eastern Pa.....	19.76	19.76	19.76	18.76
Basic, Valley furnace.....	18.00	18.00	18.00	17.00
Valley Bessemer, del'd P'gh..	20.76	20.76	20.76	19.76
Malleable, Chicago*.....	18.50	18.50	18.50	17.50
Malleable, Valley.....	18.50	18.50	18.50	17.50
L. S. charcoal, Ch'go.....	24.04	24.04	24.04	23.54
Ferromanganese, seab'd car- lots.....	85.00	85.00	85.00	85.00

†This quotation is for delivery in South; in the North prices are 38c. a ton under delivered quotations from nearest Northern furnace.
*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Rails, Billets, etc.

<i>Per Gross Ton:</i>				
Rails, heavy, at mill.....	\$36.37½	\$36.37½	\$36.37½	\$36.37½
Light rails, Pittsburgh.....	35.00	35.00	35.00	32.00
Rerolling billets, Pittsburgh.	27.00	27.00	27.00	26.00
Sheet bars, Pittsburgh.....	28.00	28.00	28.00	26.00
Slabs, Pittsburgh.....	27.00	27.00	27.00	26.00
Forging billets, Pittsburgh...	32.00	32.00	32.00	31.00
Wire rods, Pittsburgh.....	38.00	38.00	38.00	36.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb....	1.70	1.70	1.70	1.60

Finished Steel

<i>Per Lb.:</i>	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.80	1.80	1.80	1.75
Bars, Chicago.....	1.85	1.85	1.85	1.80
Bars, Cleveland.....	1.85	1.85	1.85	1.80
Bars, New York.....	2.13	2.13	2.13	2.08
Plates, Pittsburgh.....	1.80	1.80	1.80	1.70
Plates, Chicago.....	1.85	1.85	1.85	1.75
Plates, New York.....	2.08	2.08	2.08	1.98
Structural shapes, Pittsburgh.	1.80	1.80	1.80	1.70
Structural shapes, Chicago...	1.85	1.85	1.85	1.75
Structural shapes, New York.	2.05¼	2.05¼	2.05¼	1.95¼
Cold-finished bars, Pittsburgh	2.10	2.10	2.10	2.10
Hot-rolled strips, Pittsburgh	1.85	1.85	1.85	1.75
Cold-rolled strips, Pittsburgh	2.60	2.60	2.60	2.40

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables. †Blue Eagle copper.

Finished Steel

<i>Per Lb.:</i>	Feb. 5, 1935	Jan. 29, 1935	Jan. 8, 1935	Feb. 6, 1934
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	2.40	2.40	2.40	2.25
Hot-rolled annealed sheets, No. 24, Gary.....	2.50	2.50	2.50	2.35
Sheets, galv., No. 24, P'gh...	3.10	3.10	3.10	2.85
Sheets, galv., No. 24, Gary...	3.20	3.20	3.20	2.95
Hot-rolled sheets, No. 10, P'gh	1.85	1.85	1.85	1.75
Hot-rolled sheets, No. 10, Gary	1.95	1.95	1.95	1.85
Wire nails, Pittsburgh.....	2.60	2.60	2.60	2.35
Wire nails, Chicago dist. mill.	2.65	2.65	2.65	2.40
Plain wire, Pittsburgh.....	2.30	2.30	2.30	2.20
Plain wire, Chicago dist. mill.	2.35	2.35	2.35	2.25
Barbed wire, galv., Pittsburgh	3.00	3.00	3.00	2.85
Barbed wire, galv., Chicago dist. mill.....	3.05	3.05	3.05	2.90
Tin plate, 100 lb. box, P'gh...	\$5.25	\$5.25	\$5.25	\$5.25

Scrap

<i>Per Gross Ton:</i>				
Heavy melting steel, P'gh...	\$13.25	\$13.25	\$13.25	\$13.25
Heavy melting steel, Phila...	11.75	11.75	11.00	11.75
Heavy melting steel, Ch'go...	11.50	11.50	12.75	10.75
Carwheels, Chicago.....	12.00	12.00	12.00	11.00
Carwheels, Philadelphia.....	12.50	11.75	10.75	12.75
No. 1 cast, Pittsburgh.....	13.75	13.75	12.75	12.25
No. 1 cast, Philadelphia.....	11.00	11.00	11.00	12.50
No. 1 cast, Ch'go (net ton)...	10.00	10.00	10.75	9.50
No. 1 RR. wrot., Phila.....	11.25	11.25	11.25	11.00
No. 1 RR. wrot., Ch'go (net)	10.00	10.50	11.00	9.25

Coke, Connellsville

<i>Per Net Ton at Oven:</i>				
Furnace coke, prompt.....	\$3.85	\$3.85	\$3.85	\$3.50
Foundry coke, prompt.....	4.60	4.60	4.60	4.25

Metals

<i>Per Lb. to Large Buyers:</i>	Cents	Cents	Cents	Cents
Electrolytic copper, refinery†.	8.75	8.75	8.75	7.75
Lake copper, New York†.....	9.12½	9.12½	9.12½	8.00
Tin (Straits), New York.....	51.15	50.95	50.87½	51.25
Zinc, East St. Louis.....	3.70	3.70	3.75	4.40
Zinc, New York.....	4.05	4.05	4.10	4.75
Lead, St. Louis.....	3.35	3.55	3.55	3.90
Lead, New York.....	3.50	3.70	3.70	4.00
Antimony (Asiatic), N. Y....	14.50	14.50	13.87½	7.15

The Iron Age Composite Prices

Finished Steel

Feb. 5, 1935	2.124c. a Lb.
One week ago	2.124c.
One month ago	2.124c.
One year ago	2.008c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strips. These products make 85 per cent of the United States output.

	HIGH	LOW
1934.....	2.192c., April 24;	2.008c., Jan. 2
1933.....	2.015c., Oct. 3;	1.867c., April 18
1932.....	1.977c., Oct. 4;	1.926c., Feb. 2
1931.....	2.037c., Jan. 13;	1.945c., Dec. 29
1930.....	2.273c., Jan. 7;	2.018c., Dec. 9
1929.....	2.317c., April 2;	2.273c., Oct. 29
1928.....	2.286c., Dec. 11;	2.217c., July 17
1927.....	2.402c., Jan. 4;	2.212c., Nov. 1

Pig Iron

\$17.90 a Gross Ton
17.90
16.90

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	HIGH	LOW
1934.....	\$17.90, May 1;	\$16.90, Jan. 27
1933.....	16.90, Dec. 5;	13.56, Jan. 3
1932.....	14.81, Jan. 5;	13.56, Dec. 6
1931.....	15.90, Jan. 6;	14.79, Dec. 15
1930.....	18.21, Jan. 7;	15.90, Dec. 16
1929.....	18.71, May 14;	18.21, Dec. 17
1928.....	18.59, Nov. 27;	17.04, July 24
1927.....	19.71, Jan. 4;	17.54, Nov. 1

Steel Scrap

\$12.17 a Gross Ton
12.17
12.33
11.92

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	HIGH	LOW
1934.....	\$13.00, Mar. 13;	\$9.50, Sept. 25
1933.....	12.25, Aug. 8;	6.75, Jan. 3
1932.....	8.50, Jan. 12;	6.42, July 5
1931.....	11.33, Jan. 6;	8.50, Dec. 29
1930.....	15.00, Feb. 18;	11.25, Dec. 9
1929.....	17.58, Jan. 29;	14.08, Dec. 3
1928.....	16.50, Dec. 31;	13.08, July 2
1927.....	15.25, Jan. 11;	13.08, Nov. 22

Pittsburgh Output Rises Three Points to 45 Per Cent



Further Gains, However, Depend on Increased Bookings in Railroad Steel, Construction Steel and Pipe—Scrap Unchanged

PITTSBURGH, Feb. 5.—Raw steel production in the Pittsburgh district has advanced three points to 45 per cent of capacity, thus continuing uninterrupted the upward movement initiated seven weeks ago. There are indications, however, that the upswing is losing momentum, and an early leveling off at or near the current rate of operations would not be surprising. Further significant expansion in ingot output now depends upon the volume of bookings for railroad steel, construction steel and pipe, which all have been laggards in the recent general improvement. It is questionable whether much additional support to activity here can be expected from automotive buying or tin plate demand.

On certain finishes for motor car assembly, sheet mills are booked at capacity until April 1, and the movement of semi-finished steel for such conversion already has reached a full stride. The average output for sheet mills and strip mills this week will be slightly higher, at 65 to 70 per cent of capacity. That rate, although supported heavily by automotive trade, also is sponsored by an unusually steady flow of diversified steel orders. Tin plate output this week is 10 points higher at 75 per cent, with some producers engaged at capacity. Although further seasonal expansion in tin plate demand is expected, most producers are operating on slim backlogs, and the prospect of a sharp advance from the present level is rather uncertain. Steel piling inquiries are increasing and structural mills in the Pittsburgh district may benefit later in the quarter.

Steel production in the Valleys and nearby northern Ohio mills is down two points this week to 61 per cent of capacity, while Wheeling district production remains unchanged at 95 per cent. Six sheet mills have resumed at the Whitaker plant of the Wheeling Steel Corp. after being inactive since last June. The Wheeling producer has also placed in operation a butt-weld plant.

Although there is considerable talk as to the course of steel prices

for the coming quarter, it is considered unlikely that any significant changes will be made. Some discussions of advances in finished sheets are particularly general because of the high cost of production in old manual sheet mills.

Pig Iron

Jobbing foundries continue to take a fairly regular volume of small shipments. Heating equipment manufacturers are appearing in the market more frequently. Heavier melts at ingot mold plants are accounting partly for improvement in this market. It appears unlikely that any change in pig iron quotations in this district will be made for second quarter.

Semi-Finished Steel

Billets and slabs are in good demand from strip mills, and sheet bars are moving in increasing volume to non-integrated sheet mills and tin plate mills. Forging billets continue to be active for automotive and miscellaneous requirements. Few detached sheet mills have been able to build up stocks of semi-finished material, and buying is at a fairly regular pace.

Bolts, Nuts and Rivets

This market appears to be drifting, with demand showing little variation from week to week. The major consuming lines are specifying conservatively, and manufacturers are not able to schedule regular production on such limited tonnage. Prospects for improvement depend chiefly on railroad and shipbuilding activity, which at the moment is on a restricted basis.

Rails and Railroad Equipment

The Russian Soviet Government, through the Amtorg Trading Corp., New York, has ordered from the Carnegie Steel Co. 6000 forged steel wheels mounted on 3000 rolled and forged steel axles. The combined tonnage on the order totals about 2300 tons. The wheels and axles will be produced in the Carnegie company's Pittsburgh district plants. The Wheeling & Lake Erie Railroad has purchased 2000 tons of steel rails from the Carnegie Steel Co. No inquiry for the companion fastenings has appeared thus far. General rail-

road inquiry in this district is rather thin.

Bars

Bookings in the first few days of February indicated that the strong gains made in January will continue for the time being. No let-up in automotive orders is in sight, while other important consuming industries are sustaining interest in their early requirements. Forging bars are contributing a good deal to activity. Demand from machine tool manufacturers continues to be limited.

Reinforcing Steel

The South is the most fruitful source for inquiries. Road work in that section is not interrupted by weather conditions and specifications for such work are coming out freely. The general market, however, probably will not shake off its seasonal dullness for another six weeks, and in the meantime mills are being engaged on rather uncertain schedules.

Cold-Finished Bars

A fairly heavy volume of business from the automotive industry, farm implement manufacturers and miscellaneous users is now being supplemented by slightly better buying among jobbers. The increased demand from the jobbing trade, however, is not yet up to expectations. Specifications from the farm implement makers in February are expected to increase further.

Plates and Shapes

Twenty steel coal barges of the Carnegie Steel Co. will be rebuilt at the Carnegie marine ways, Coal Valley, and at the American Bridge Co. ways at Ambridge, Pa. Approximately 700 tons of plates and shapes will be required for the work. Interest in several tentative barge inquiries in the Chicago district still is alive, and some contracts may be closed within a month. A total of approximately 15,000 tons of plates would have to be bought in the event present plans for new bottoms materialize. Included in the inquiries are coal, oil and some sand barges. Bids have been received by the Tennessee Valley Authority at Knoxville, Tenn., for about 1000 tons of permanent piling for the Pickwick Landing dam. It is estimated that 5000 tons of temporary piling will be required for the coffer dam for the Pickwick Landing lock. The structural steel market is in the doldrums, with public work predominant on a spare list of new projects.

Wire Products

Material increase in orders, partly stimulated by automotive

activity, has accelerated wire mill operations several points this week, the average rate for the industry being around 38 per cent. A slight increase is noticeable in jobbing demand. There is evidence of stocking of manufacturers' wire in the automotive industry, presumably in anticipation of heavy assembly plans for February and March.

Tubular Products

Orders for standard pipe are in better volume. Demand for oil-country goods has not yet recovered entirely from the recent moderate slump. The movement of seamless mechanical tubing to automotive centers is gradually increasing. Seamless commercial boiler tubes and locomotive tubes are generally quiet. The line pipe market offers little encouragement for early placement of any large tonnages.

Sheets

Specifications in the past week exceeded those for the preceding period. The heavy influx of orders was ascribable partly to a desire of consumers to find a place on mill schedules. Full-finished sheet units are practically booked at capacity until April 1. Other items for automotive consumption, including common black and single pickled sheets, are in strong demand, but mills are able to make quicker shipments on these items. Miscellaneous specifications are in exceptionally good volume, with notable improvement in orders for locker and shelving stock, farm implements and refrigerators. The sheet industry this week will be engaged slightly higher at 65 to 70 per cent of capacity.

Tin Plate

Specifications for general line and packers' cans continue in good volume. Some mills have stepped up production and are rolling in anticipation of shipping dates. Specifications have been placed to justify a current output of about 75 per cent of capacity, with some mills shipping about 60 per cent of current output. Anticipatory rolling is cutting down backlogs, and some mills now are only a week behind specifications. The three leading producers are averaging from 60 to 85 per cent of capacity, while several smaller producers are operating at virtual capacity.

Strip Steel

January volume registered a sharp increase over December bookings, but it is considered doubtful by some producers that the rate of improvement will be held in February. Nevertheless additional capacity is being placed in operation this week, and to meet current com-

mitments operations likely will be gaited at around 70 per cent. Pressure for deliveries in the automotive industry has not relaxed. In some instances strip producers are not promising deliveries on certain items for at least two weeks. Sustained interest is reported in other strip consuming industries. A further increase is expected in orders this month from agricultural implement manufacturers. Jobbers are not laying in heavy stocks, but continue to replenish with unusual conservatism. Strip is moving in moderate amounts for small home building, and in negligible volume for large building construction.

Coke and Coal

Demand for lump and domestic-sized bituminous coal is fairly steady. The entire bituminous market, however, lacks tone, perhaps owing chiefly to unsettlement over code matters. The seasonal demand for lump coal has naturally supplemented already heavy stocks of slack, which some producers now are laying on their yards for Lake shipment next spring. Although bituminous coal prices are nominally unchanged for February, concessions are appearing frequently. The coke market in this district has not improved. The highly competitive situation on the Eastern seaboard has decreased shipments of beehive coke out of this district, where demand is not sufficient to absorb surplus tonnage. Severe weather has increased demand for crushed domestic heating sizes, but interest in furnace and foundry coke remains limited.

Scrap

Trading in the past seven days has been slow despite a continued rise in Pittsburgh district mill operations. Although the scrap market is wilting slightly as a result of the aloofness of large buyers, no open breaks in prices have appeared. No. 1 heavy melting steel in 200 and 300-ton lots has been sold at as low as \$13 delivered, but important brokers in this district still are rather firm in their ideas of price when major tonnage is discussed. Consequently there is no change for the time being in the quotational spread of No. 1 steel of \$13 to \$13.50. The Pittsburgh market also is feeling the absence of buying by the Wheeling district mills, which apparently are remaining inactive until the closing tomorrow of the Pennsylvania Railroad list, which contains 15,700 tons, including about 5500 tons of No. 1 heavy melting steel. No. 1 steel on the last Baltimore & Ohio list is reported to have been sold at \$13.85, Bessemer and Johnstown, Pa. Weakness in machine shop turnings is more evident as

a result of heavier industrial production. A Youngstown district mill last week purchased 20,000 tons of No. 1 heavy melting steel at a reported price of \$13.75, delivered.

Manganese Ore Duty To Be Reduced

WASHINGTON, Feb. 5.—The reciprocal tariff agreement between the United States and Brazil is said to call for a reduction of 50 per cent in the duty on manganese ore. This would mean a duty of ½c. a lb. of contained manganese from Brazil.

It is said a like reduction would not apply to Soviet Russia because of "special conditions" existing in the case of Russia. These special conditions were not explained. Apparently they are related to the recent deadlock between the United States and Russia over efforts to reach an agreement over Russian debts. The matter of alleged forced labor in producing Russian manganese ore likewise is said to figure in the situation.

The status of manganese ore from India was not explained, but the belief is it would be given the same reduction in duty conceded to Brazil.

Aroused over reports that the American-Brazilian reciprocal tariff agreement, yet to be ratified by Brazil, provides for a 50 per cent reduction in the duty on manganese ore imported from Brazil, Senators and Representatives from manganese ore producing states are holding a caucus today to protest the slash in the duty. The caucus is made up of members of the House and Senate who last July presented a petition to the President, evidently in an effort to restrict importation of manganese ore, to "take such action as may be necessary to develop domestic deposits." The petition was signed by 44 Senators and 145 Representatives. The caucus was attended by a relatively small delegation, due, it was said, to the fact that it was necessary to call it on short notice.

Stainless Steel Items Reduced

BARS and drawn wire of stainless steel, type 411, have been reduced to 17c. a lb. from 18c., Pittsburgh, effective Feb. 11, according to schedules filed with the American Iron and Steel Institute.

Forging billets, No. 411, have been cut 0.85c. a lb. to 14.45c. a lb., Pittsburgh, effective Feb. 11.

Steel Bookings Continue To Expand at Chicago



Ingot Output Is Unchanged at 67 Per Cent But a Further Rise Is Looked For
—Pig Iron Shipments Still Rising

CHICAGO, Feb. 5.—Steel production remains steady at 67 per cent of capacity, but both new orders and specifications are the best of the year by a substantial margin and most producers look for further gains in ingot output in the very near future.

Chicago mills participated in the Burlington rail business and they now expect that railroad to order about 8000 tons of accessories. The Milwaukee Road has been added to the list of potential rail buyers. Another encouraging development is the fact that railroad shops are calling men back to work and are taking more steel.

Bar shipments currently constitute about one-half of the total finished steel movement. Sheet mill products come next in line, with the heavy products lagging, not only the movement from mills but also in shipments from warehouses.

In the construction field the week has been uninteresting. Both inquiries and lettings are meager and private undertakings appear only in columns that were reported in January.

Pig Iron

Shipments continue to gain and all signs indicate that the February movement will exceed that for January despite the shorter month. Stove foundries are running at a better gait and malleable shops are particularly busy. Inventories at blast furnaces are being cut down very fast.

Rails

The Southern Pacific has ordered over 26,000 tons of rails, 19,500 tons of which was placed with the two Pacific Coast steel companies and 7600 tons was taken by the Colorado mill. The Burlington has placed 16,000 tons of rails, of which 7700 tons went to Illinois Steel Co., 4300 tons to Inland Steel Co. and 4000 tons to the Colorado mill. It is reported that the Burlington will require at least 8000 tons of accessories. The Milwaukee Road is now mentioned as a potential buyer, though it is understood that it may not require its tonnage until late in the spring. Orders for

light rails are holding all recent gains.

Warehouse Business

The number of orders placed in January exceeded the total in December, and business remains brisk as February gets under way. After dragging for many months, country business has started to grow and now about equals the volume emanating from urban areas.

Wire Products

Output has been raised and is now leading shipments, with the result that mills' stocks are growing. There is no let-up in the rate of demand from manufacturing sources, and slow but steady growth in demand from jobbers is noticeable. The jobbing trade is still very dull in the Northwest, but that is of little concern at this time for the reason that the winter in that section has been severe and it is yet too early for outdoor work.

Hot-Rolled Strip

Shipments are steady to automobile plants and motor wheel manufacturers. Tonnages moving into miscellaneous channels are small and have shown little change in recent weeks.

Sheets

Demand is still very pressing and in some mills the pickling and annealing departments are operating at capacity. There is little leeway in deliveries for the cold-rolled products, and deliveries are getting tighter on some of the hot-rolled products. Roofing manufacturers now have inventories out of the way and are replenishing their stocks.

Plates

About 4000 tons of plates will be used for a syphon that will be fabricated on the Pacific Coast. Other orders are small but more numerous, and some of them, reflecting larger needs in railroad shops, are very encouraging in a market that has been unusually quiet. The Chesapeake & Ohio and the Liquid Carbonic Co. have placed small car orders, and the Merchants Despatch is mentioned as a probable buyer of refrigerator cars.

Bars

Specifications for bars are fully 50 per cent of the total of finished steel specifications. There is practically no change in the channels into which bars are flowing except that railroad shops are taking more tonnage and demand from miscellaneous small shops is still increasing.

Structural Material

Private work is confined to several small projects which were announced in January. Current inquiries are all for bridge work or jobs which are being undertaken with the aid of Government funds. Much steel tonnage remains to be placed in upper Mississippi River dams, but evidently more money must be appropriated before this work can go ahead.

Reinforcing Bars

Fabricators are finding only a moderate amount of fresh inquiry, but they feel well fortified with the amount of work that is pending. The financial plans for the Outer Drive, Chicago, appear to be making headway. Fully 1000 tons of Illinois bridge work is soon to be ordered by contractors, and in a month to six weeks some orders for road slab work should be placed. Bids on numerous small post offices will fall due on Feb. 12 and large water and sewage jobs such as at Hammond, Ind., and Milwaukee should come in the early spring. It is worthy of note that in Chicago there are three pending projects that are to be undertaken with private funds.

Cast Iron Pipe

All inquiries are small and scattered and they are for the most part confined to water and sewage treatment plants. Bids will be taken Feb. 15 on such a job at Ann Arbor, Mich. Orders from utility plants are lacking, and railroad business is confined to a few lengths here and there.

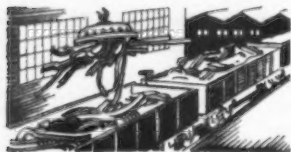
Coke

Foundry coke for shipment in February remains unchanged at \$8.50 a ton for delivery outside the switching district. January shipments led December by more than 20 per cent.

Scrap

Although mills are using and accepting liberal quantities of scrap, incoming tonnages are nevertheless troublesome and the market still leans slightly to the weak side. Heavy melting steel has sold down to the equivalent of \$11.50 a ton for the railroad grade, though on a late sale \$11.75 was obtained for a round tonnage of the No. 1 grade. Some of the specialties are weaker.

Gold Clause Case Puts Damper on New York Mart



Buyers Show New Hesitancy in Ordering — 9650 Tons of Structural Steel Placed by New York Central

NEW YORK, Feb. 5.—Though January steel bookings in this district showed a moderate gain over those of December, the opening days of February have been relatively quiet so far as new business is concerned. Uncertainty as to the forthcoming gold clause decision of the United States Supreme Court is the principal cause for the recession in demand. While most buyers believe that the Government will find some way to circumvent the decision if it upholds the gold contract, they are delaying purchases "just in case." The sold-up condition of cold-finished sheet mills and cold-rolled strip plants is not stampeding users in this area, since their requirements are not nearly so urgent as those of the automobile and affiliated industries.

Fabricating awards totaling 9650 tons have been placed for track depression and elevation work for the New York Central on the west side of Manhattan. For track elevation between Seventy-second and Seventy-ninth Streets Poirier & McLane Corp., New York, has placed 4000 tons with Harris Structural Steel Co. and 4000 tons with American Bridge Co. For track depression between Forty-second and Fifty-third Streets, P. T. Cox Contracting Co., New York, has awarded 1650 tons to American Bridge Co. A pending 48-in. pipe line for Pelham Parkway in Westchester County, New York, will require about 1300 tons of plates.

The secondary pipe market in this district is still unsettled. Pipe jobbers have reported to mills that they can purchase pipe from other jobbers at lower prices than are asked by producers.

Pig Iron

Small orders from different foundries are coming in each week, and the aggregate bookings of furnace representatives here are slowly rising. Total orders for the past seven-day period amounted to 1800 tons, as compared with 1100

tons in the preceding period and 1250 tons two weeks earlier.

Reinforcing Steel

Igoe Brothers secured most of the available business in this territory during the past week. Bridges and roads in New Jersey accounted for 800 tons, and a sewer in Brooklyn taking 100 tons was also placed with this distributor. The one sizable project active here totals 1000 tons and covers the requirements for highway and railroad improvements on the West Side of Manhattan. Other pending projects include 230 tons for the substructure of pier No. 25 at New York, 200 tons for a school in Bayonne, N. J., and 100 tons for a grade separation at Fort Wadsworth, Staten Island, N. Y.

Mills Near Capacity in Cincinnati District

CINCINNATI, Feb. 4.—Heavy sheet steel orders, particularly from automotive sources, are sustaining production at near to capacity in this district. The automobile companies, in fact, are accounting for about 50 per cent of present bookings, a level nearly 15 points above the former average demand from this source. At the same time, trends in other lines indicate a steady upward demand for steel, reflecting the promotion of new uses. Forward buying, however, is negligible, current business being for present use, with shipping requests urgent. The constantly increasing backlog of district mills now equals slightly more than seven days' rolling capacity.

A slight increase in pig iron sales reflects moderate improvement in automotive melt. Bookings totaled about 600 tons, of which about 370 tons was Southern iron. Shipments are steady, with foundries taking all iron ordered. Scattered interest in forward needs is strengthening the market

Scrap

Local export brokers have experienced about the poorest week for a number of months as regards boat loadings. The heavy snow and cold weather are still interfering seriously with trucking, and several barges have almost sunk due to bad ice conditions in the rivers. The lack of deliveries to boats ready to sail has been reflected in temporary cuts in freight charges, in some cases as high as 50 per cent. What little material is being delivered to barges is bringing the usual prices of \$9 and \$7.50 a ton for No. 1 and No. 2 steel respectively, although highly competitive lots have occasionally been bought at levels averaging 25c. higher. No. 2 cast is being accumulated for England, stove plate in small quantities is going to a nearby domestic melter, and heavy breakable cast is being delivered to Harrisburg, Pa. The entire market here still has a slightly strong tone, although no significant reflection in prices is expected over the next month. There is talk that Japanese pig iron sellers will reduce prices 2½ yen in order to compete more successfully with scrap from this country. Definite action of this nature would probably result in reduced export loadings in this area.

undertone. Inventories are light and inquiry slight.

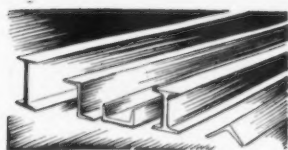
Warehouse demand in January exceeded any month in 1934 and was reported to be the best in several years. Business is almost entirely from industrial sources. Efforts to stimulate building demand in advance of effective date of the Ohio sales tax were without result.

Sales of scrap in other areas at prices under recent highs failed to disturb this area, although the market undertone is softer. Prices remain steady, though nominal. One mill made its first quarter commitment in January, but ordering otherwise is small.

Iron & Steel Products, Inc., Railway Exchange, Chicago, has purchased for dismantling, approximately 200 freight cars and 15 locomotives from the Missouri & North Arkansas Railway, Harrison, Ark.

Erman, Howell & Co., Chicago, dealers in scrap iron and steel, are moving their offices from their yard at 300 West Eighty-seventh Street, to 561 McCormick Building.

Cleveland-Lorain Rate Is Up Two Points to 69 Per Cent



Pressure for Deliveries of Sheets and Cold-Rolled Strip Is Unabated—Rush to Cover for Second Quarter Expected When Books Are Opened

CLEVELAND, Feb. 5—With little tonnage of sheets and wide cold-rolled strip available for the remainder of the current quarter, a sustained demand from automobile manufacturers and a broadening volume of business from other sources, steel makers are predicting that the present good rate of operations will be maintained well through the second quarter, provided there are no labor disturbances to seriously curtail the production of automobiles.

Ingot output in the Cleveland-Lorain territory advanced two points this week to 69 per cent of capacity, the recent peak, a temporary drop having been necessitated by open-hearth repair work.

Most sheet and strip mills are operating at near capacity and consumers are having some difficulty in finding mills that can take orders for finished sheets for early shipment. Pressure for deliveries of sheets and cold-rolled strip by motor car manufacturers is unabated. Some sheet consumers would like to place contracts for the second quarter for which prices are to be filed Feb. 20, and a rush to cover for that delivery is expected from automobile makers as soon as books are opened. Makers of automobile parts are being pushed for deliveries.

Bolt and nut plants are taxed to capacity for making the types of semi-finished nuts used in automobiles and some have enough orders to keep those departments running full for 60 days.

The Wheeling & Lake Erie has placed 2200 tons of rails. Rail purchases by the Van Sweringen roads are not expected for some time. Miscellaneous demand from railroads is light.

Pig Iron

Shipments continue heavy, although new demand is not very active. A leading Lake furnace interest shipped 75 per cent more iron in January than during December. This company sold 5000 tons during the week. Some of the

jobbing foundries making automotive castings have not yet used up all of the iron that they stocked last June, and because of this the recent demand for gray iron from this source is somewhat less than might be expected. Agricultural implement manufacturers continue to take a good tonnage. Demand from the heating industry is holding up well, the seasonal slump of business from that source not being as great as is usual at this time of year. One producer reports a 30 per cent gain in shipments of foundry coke in January over December.

Bars, Plates and Shapes

Demand for bars from motor car manufacturers, forge shops and other automobile parts makers continues heavy and some of the mills have extended deliveries to two or three weeks. The Willys-Overland Co., Toledo, has added 5000 cars to its production schedule. It has purchased some steel and is placing considerable of the work with parts makers. Business from the agricultural implement manufacturers is good. With sizeable releases from fabricators of steel recently placed orders for structural shapes have increased. Awards are more numerous than for some time. These include 1100 tons for a building in Mount Vernon, Ohio, for the Pittsburgh Plate Glass Co.; 215 tons for a State highway bridge at Franklin, Warren County; and 335 tons for a Chesapeake & Ohio bridge at Newport News, Va. Cleveland will take bids Feb. 21 for a blower building for the Easterly sewage disposal plant, requiring 330 tons of reinforcing bars and approximately 300 tons of structural steel. The Ohio highway department will take bids Feb. 9 for a Clermont County bridge requiring 85 tons of structural shapes. Bids for 2400 tons of reinforcing bars are being taken today by United States Engineers in Zanesville for the Muskingum conservancy district. Plates are in moderate demand.

Sheets

New demand from the automotive industry is being maintained at the recent heavy volume, and the scarcity of sheets for early shipment is becoming more acute. Many of the mills have taken all the cold-rolled material they can produce during the present quarter, and deliveries on hot-rolled sheets are becoming more extended, although good deliveries can be obtained on heavy hot-rolled sheets. To secure better deliveries, some consumers who ordinarily specify hot-rolled pickled sheets are taking sheets without being pickled. Consumers are scouring the market in efforts to find a mill that can promise better deliveries than their usual source of supply, and producers are getting inquiries for car lots for mill shipment from jobbers, who, except in the case of galvanized, get no concession from the mills and thus make the sale without profit unless they charge the customer a premium over the mill price. Stocks of many miscellaneous consumers were very low at the start of the year and these are now finding difficulty in securing sheets as needed.

Strip Steel

New orders for substantial tonnages were placed by automobile manufacturers and parts makers during the week, and some of the mills have orders for all the wide cold-rolled strip they can produce during the quarter. Deliveries have extended to three or four weeks on the narrower material. Orders for hot-rolled strip from cold-rolling mills continue heavy and delivery promises have been extended to three weeks.

Scrap

A Cleveland consumer has just purchased approximately 5000 tons of blast furnace scrap, paying \$9 for mixed borings and turnings and short shoveling turnings, the same price that another Cleveland plant recently paid for these grades. The purchase also included machine shop turnings, for which \$8.50 was paid. A Youngstown district consumer purchased about 50,000 tons of steel-making scrap, paying \$13.75 for No. 1 heavy melting steel, or 50c. a ton more than this consumer paid during the previous week. The market is firm, with few changes in quotations. Machine shop turnings and railroad malleable have advanced \$1 a ton. Because of heavy shipments against recent orders, one Cleveland mill is now regulating shipments of steel-making scrap.

Operations Remain Unchanged In Eastern Pennsylvania



Reading Iron Co. Purchases 2000 Tons of Pig Iron; 5000 Tons More Will Be Bought in First Quarter—Scrap Quiet But Firm

PHILADELPHIA, Feb. 5.—The smaller miscellaneous and widely diversified steel consumers continue to send in bookings, the total of which is supporting most of the activity in this district. No large outlet is helping this district and it is seemingly improbable that the aggregate operating rate will go much beyond the present level. The only development which would alter this view is the inauguration of new construction and repair programs by the railroads, a situation which is quite remote from present indications.

Open-hearth activity in the district remains unchanged at 36 per cent of capacity. The Pencoyd plant is running three furnaces three days a week, and the small structural mill is scheduled for full operation until Friday. Bethlehem's Sparrows Point, Md., plant is operating near capacity, particularly in the spring wire, tin plate and sheet steel departments.

It is likely that present finished steel prices will be reaffirmed for second quarter, although semi-finished steel may be advanced. Likewise, it is improbable that pig iron quotations will be revised unless the railroads are successful in their demands for higher rates on raw products.

Pig Iron

Total January shipments well exceeded those for December. However, the current sales volume is still far from satisfactory, as foundry melt is showing no tendency to rise. The largest sale for some months came to light last week, as the Reading Iron Co. announced the purchase of 2000 tons from furnaces in this area. This same company intends to buy 5000 additional tons of iron during the remainder of the quarter. The Reading pipe mill is now operating at 40 per cent.

Sheets and Strip

Galvanized sheets and strip steel are selling in slightly better volume, but the heaviest activity is in automobile material. Both of the

local autobody stamping plants are operating near their maximum capacities and are purchasing steel in sizable quantities each week. Due to the pressure for deliveries in the West, about the best shipment date obtainable here is mid-March. Stove makers have increased their output slightly and are placing occasional orders for strip, hoops, sheets, bolts, etc.

Bars, Plates and Shapes

There is practically no demand for plates here, and sellers are struggling along on what little miscellaneous business comes in each day. In the same manner, structural steel mills are almost inactive in the absence of highway construction and private building. McClintic-Marshall Corp. will supply 265 tons for a bridge in Sullivan County, Pa. Pending projects include a North Philadelphia post office, on which George A. Fuller Co. is low bidder; Philadelphia Navy Yard buildings, on which Irwin & Leighton are low bidders; a post office at Clarks Summit, Pa., with Breig Brothers of Scranton, Pa., low bidders; a store building at 1702 Walnut Street, Philadelphia, and a dormitory at Sykesville, Md. Reinforcing bars are also quiet in the absence of highway construction. No sizable award was made during the week, and the only new project calls for 230 tons, for barracks at Carlisle, Pa.

Imports

The following iron and steel imports were received here last week: 536 tons of chrome ore from British South Africa, and 79 tons of steel bands, 33 tons of structural shapes, 27 tons of steel bars and 21 tons of diamond plates from Belgium.

Scrap

The price structure on important grades remains unaltered. Weather conditions are responsible for a continued strong market undertone inasmuch as only a small proportion of scheduled shipments are going forward on time. Rolled

steel wheels, cast iron car wheels and forge fire are all higher on the basis of consumer purchases in eastern Pennsylvania. Likewise, compressed bundles, both old and new, have been advanced on the strength of a lift in brokers' buying prices for these grades. Pencoyd is now in the market, but is experiencing a little difficulty buying at prices being offered. That mill is now offering \$10 for No. 2 steel, but little has come out at that level. A \$9.75 quotation for breakable cast, however, has netted some tonnage locally inasmuch as the Coatesville consumer is withholding shipments on this grade. For Phoenixville delivery, \$10.25 is the best price obtainable for No. 2 steel. Bethlehem continues to secure fair quantities of both No. 1 and No. 2 steels for Sparrows Point, Md., delivery at \$11 and \$10 respectively in the Baltimore and Washington districts.

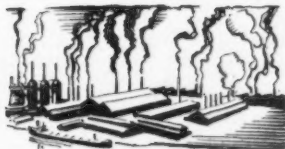
Basic Bessemer Steel Output in England

ANOTHER stage has been reached in the development of the iron and steel industry at Corby, Northamptonshire, England, where the first heat of steel has been made in the basic Bessemer department of the new works of Stewarts & Lloyds, Ltd.

In the presence of officials of the firm and of H. A. Brassert & Co., Ltd., Chicago consulting engineers for the erection and operation, molten metal direct from No. 1 blast furnace was poured into the first of the three converters, and high-grade steel suitable for the manufacture of tubes was made from this first heat. The spectacle marked the beginning of the revival of the basic Bessemer process in England, and the manufacture of steel and tubes direct from native ores.

The White Motor Co., Cleveland, has become entirely separated from the Studebaker Corp. as a result of an approval by the court of the reorganization of the latter corporation. The merger of the two companies was blocked a year ago by the opposition of a minority interest in the White Motor Co. The White company has selected a new board of directors on which are included A. G. Bean, president of the White company; Fred H. Chapin, president, National Acme Co.; W. King White, president, Cleveland Tractor Co., and R. M. Fisher, treasurer, Midland Steel Products Co., Cleveland.

Steel Output and Scrap Prices Rise in Valleys



Hubbard Stack Is Warming Up and
Brier Hill Steel Plant, Idle Since 1931,
Is Resuming—Steel Scrap Up 50c a Ton

YOUNGSTOWN, Feb. 4.—Steel mill operations in the Valley district are exceeding expectations. With the automobile industry accounting for the major part of the current bulge in demand, it had been felt until recently that steel output could not expand much further, since mills making materials for the motor car trade are running virtually at capacity. Now, however, it appears that further gains are due. Iron and steel plants that have long been idle are being prepared for a resumption of operations. The Youngstown Sheet & Tube Co. is reopening its Brier Hill open-hearth plant which has not been operated since 1931 and is warming up a recently relined Hubbard, Ohio, blast furnace. The Brier Hill plant has 12 open-hearths, and three of these are expected to be in operation by Feb. 10.

The scrap market was quick to respond to the prospect of further gains in steel output. In the face of recent declines in heavy melting scrap at Chicago and at Pittsburgh, the local market has risen on mill purchases from \$13.25 to \$13.75 a ton.

The atmosphere of activity evident in the Youngstown area is in marked contrast with the more somber tone of the Pittsburgh district, which is more dependent on the heavier rolled products. Whereas the number of people on Youngstown relief rolls is being rapidly reduced, fully one-third of the population of Allegheny County, in which Pittsburgh is located, is still on the dole.

Sentiment, of course, mirrors the rate of industrial activity, but notwithstanding the relatively high operations of this district, the Valley viewpoint is still conservative. Much is believed to depend on the duration of the current volume of demand from the motor car industry. While a continuance of the present rate of mill operations now seems assured for the rest of the first quarter, there are doubts as to what the second quarter will bring forth. These doubts have been accentuated by the maneuvers of

organized labor. The sorry showing of the American Federation of Labor in the employee elections at automobile plants has not discouraged its board of strategy. When blocked on one front it releases an attack on a new front. In tying up the plant of the Pittsburgh Plate Glass Co. organized labor aimed a blow at the automobile industry and the steel trade. Only one other company produces shatter-proof glass, which is required in all new automobiles in a number of States. Obviously, if the glass supply can be reduced enough to seriously cripple the motor car industry, the current recovery movement will be endangered.

If, on the other hand, the present rate of activity can be maintained for a period of four or five months, a momentum will be acquired, it is believed, which will cause recovery to spread to lines which are now relatively inactive.

The oil industry, for example, is faced with the necessity for prospecting for new fields, since "visible" supplies in present reserves are estimated as only sufficient for 12 years' consumption. But new capital investment calls for confidence, which at present is lacking.

Similarly large expenditures for rehabilitation of industrial plants will be made as soon as it becomes apparent that business conditions have really stabilized. Throughout the depression, idle equipment has been robbed to maintain active capacity. In addition, obsolescence has taken its toll. In many instances plants have reached the point where they can no longer defer maintenance and have been forced to make expenditures to keep their plants running. Recent increases in industrial demand for pipe are largely due to the deferred maintenance. Though industry is still reluctant to make major outlays for plant rehabilitation, in numerous instances plans have been completed and will be acted upon as soon as the business traffic light turns green.

Recent capital outlays in the steel industry have been mainly for continuous sheet and strip installa-

tions and these have been made for purely competitive reasons. The "me too" complex—the belief that it is necessary to have a mill with as low costs as those of competitors has quite outweighed consideration of excessive expansion of the country's flat rolled steel capacity. Meanwhile comparatively little attention has been given to other equipment. Blast furnaces, open-hearths, and blooming mills, as well as numerous forms of finishing mills, are all in need of modernization. One large steel company, not in this immediate district, is known to have a rehabilitation program all ready to launch.

The rise in activity in this district has already resulted in a shortage of certain forms of housing, raising hopes for a revival in the much depressed building industry. However, it is feared that construction costs, owing to the high level of building trades wage rates, are too high in comparison with the cost of automobiles and other products bought by the consuming masses.

The steel industry's attitude toward costs and prices has become notably conservative. Though some non-integrated sheet mills are agitating for higher prices, other producers are apparently opposed to such a move, fearing that an advance might discourage demand. In fact certain producers would favor a reduction of prices if it could be brought about. But such a move would call for a lowering of wage rates, which is impossible under the code. The viewpoint of these mills is that wage rates may have been raised too high in comparison with the purchasing power of the country at large, and that volume and hence the weekly income of steel workers would be greater if hourly rates were lower. There is no objection to stabilization of wages. The Administration erred only in confusing advances in wage rates with increases in workers' income, which in the last analysis is dependent on the volume of orders booked for rolling.

Though the industry takes exception to this and other steps taken under the NRA, it is preponderantly favorable to a continuance of the code. Open prices provide a protection from "chiseling" which mills fear would recur with a return of unrestricted competition. Attention is called to the experience of the uncoded bolt and nut industry which, in the late months of 1934, reached such a state of price demoralization that it booked business from automobile makers at 20 per cent below cost.

Wire mills in the Valleys are
(CONCLUDED ON PAGE 72)

Prices of Finished Steel and Iron Products

BARS, PLATES, SHAPES

Iron and Steel Bars

Soft Steel	Base per Lb.
F.o.b. Pittsburgh	1.89c.
F.o.b. Chicago	1.85c.
F.o.b. Gary	1.85c.
F.o.b. Duluth	1.95c.
Del'd Detroit	1.95c.
F.o.b. Cleveland	1.85c.
F.o.b. Buffalo	1.90c.
Del'd Philadelphia	2.09c.
Del'd New York	2.13c.
F.o.b. Birmingham	1.95c.
F.o.b. cars dock Gulf ports	2.29c.
F.o.b. cars dock Pacific ports	2.35c.

Rail Steel

(For merchant trade)

F.o.b. Pittsburgh	1.70c.
F.o.b. Chicago	1.75c.
F.o.b. Gary	1.75c.
F.o.b. Moeline, Ill.	1.75c.
F.o.b. Cleveland	1.75c.
F.o.b. Buffalo	1.80c.
F.o.b. Birmingham	1.85c.
F.o.b. cars dock Gulf ports	2.10c.
F.o.b. cars dock Pacific ports	2.25c.

Billet Steel Reinforcing

(Straight lengths as quoted by distributors)	
F.o.b. Pittsburgh	2.65c.
F.o.b. Chicago	2.60c.
F.o.b. Gary	2.60c.
Del'd Detroit	2.20c.
F.o.b. Cleveland	2.10c.
F.o.b. Youngstown	2.10c.
F.o.b. Buffalo	2.10c.
F.o.b. Birmingham	2.10c.
F.o.b. cars dock Gulf ports	2.45c.
F.o.b. cars dock Pacific ports	2.45c.

Rail Steel Reinforcing

(Straight lengths as quoted by distributors)	
F.o.b. Pittsburgh	1.90c.
F.o.b. Chicago	1.90c.
F.o.b. Gary	1.95c.
F.o.b. Cleveland	1.95c.
F.o.b. Youngstown	1.95c.
F.o.b. Buffalo	1.95c.
F.o.b. Birmingham	1.95c.
F.o.b. cars dock Gulf ports	2.30c.
F.o.b. cars dock Pacific ports	2.30c.

Iron

F.o.b. Chicago	1.80c.
F.o.b. Terre Haute, Ind.	1.75c.
F.o.b. Louisville, Ky.	2.10c.
F.o.b. Danville, Pa.	1.80c.
F.o.b. Berwick, Pa.	1.70c.

Cold Finished Bars and Shafting*

	Base per Lb.
F.o.b. Pittsburgh	2.10c
F.o.b. Chicago	2.15c
F.o.b. Gary	2.15c
F.o.b. Cleveland	2.15c
F.o.b. Buffalo	2.20c
Del'd Detroit	2.30c
Del'd eastern Michigan	2.35c

* In quantities of 10,000 to 19,000 lb.

Fence and Sign Posts

Angle Line Posts

	Base per Net Ton
F.o.b. Pittsburgh	\$50.00
F.o.b. Chicago	50.00
F.o.b. Duluth	51.00
F.o.b. Cleveland	50.00
F.o.b. Birmingham	53.00
F.o.b. Houston, Orange, Beaumont, Galveston	59.00
F.o.b. Mobile	58.00
F.o.b. New Orleans, Lake Charles, Corpus Christi	59.00
F.o.b. cars dock Pacific ports	63.00

Plates

	Base per Lb.
F.o.b. Pittsburgh	1.80c.
F.o.b. Chicago	1.85c.
F.o.b. Gary	1.85c.
Del'd Cleveland	1.985c.
F.o.b. Coatesville	1.90c.
F.o.b. Sparrows Point	1.90c.
Del'd Philadelphia	1.985c.
Del'd New York	2.08c.
F.o.b. Birmingham	1.95c.
F.o.b. cars dock Gulf ports.	2.20c.
F.o.b. cars dock Pacific ports.	2.35c.
Wrought iron plates, f.o.b. P'gh.	3.00c.

Floor Plates

F.o.b. Pittsburgh	3.35c.
F.o.b. Chicago	3.40c.
F.o.b. Coatesville	3.45c.
F.o.b. cars dock Gulf ports	3.75c.
F.o.b. cars dock Pacific ports	3.90c.

Structural Shapes

	Base per Lb
F.o.b. Pittsburgh	1.80c
F.o.b. Chicago	1.85c
Del'd Cleveland	1.985c
F.o.b. Buffalo	1.90c
F.o.b. Bethlehem	1.90c
Del'd Philadelphia	2.005c
Del'd New York	2.0525c
F.o.b. Birmingham (standard)	1.95c
F.o.b. cars dock Gulf ports	2.20c
F.o.b. cars dock Pacific ports	2.35c

Steel Sheet Piling

	Base per Lb.
F.o.b. Pittsburgh	2.15c.
F.o.b. Chicago	2.25c.
F.o.b. Buffalo	2.25c.
F.o.b. cars dock Gulf ports	2.60c.
F.o.b. cars dock Pacific ports.....	2.60c.

SHEETS, STRIP, TIN PLATE

TERNE PLATE

Sheets

Hot Rolled	Base per Lb.
No. 10, f.o.b. Pittsburgh	1.85c.
No. 10, f.o.b. Gary	1.95c.
No. 10, del'd Detroit	2.05c.
No. 10, del'd Phila.	2.14c.
No. 10, f.o.b. Birmingham	2.00c.
No. 10, f.o.b. dock cars Pacific ports	2.40c.

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh	2.40c.
No. 24, f.o.b. Gary	2.50c.
No. 24, del'd Detroit	2.60c.
No. 24, del'd Phila.	2.69c.
No. 24, f.o.b. Birmingham	2.55c.
No. 24, f.o.b. dock cars Pacific ports	3.05c.
No. 24, wrought iron, Pittsburgh	4.30c.

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh	2.50c.
No. 10 gage, f.o.b. Gary	2.60c.
No. 10 gage, del'd Detroit	2.70c.
No. 10 gage, del'd Phila.	2.79c.
No. 10 gage, f.o.b. Birmingham	2.65c.
No. 10 gage, f.o.b. dock cars Pacific ports	3.10c.

Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh	2.95c.
No. 20 gage, f.o.b. Gary	3.05c.
No. 20 gage, del'd Detroit	3.15c.
No. 20 gage, del'd Phila.	3.24c.
No. 20 gage, f.o.b. Birmingham	3.10c.
No. 20 gage, f.o.b. dock cars Pacific ports	3.50c.

Galvanized Sheets

No. 24, f.o.b. Pittsburgh	3.10c.
No. 24, f.o.b. Gary	3.20c.
No. 24, del'd Phila.	3.39c.
No. 24, f.o.b. Birmingham	3.25c.
No. 24, f.o.b. dock cars Pacific ports	3.70c.
No. 24, wrought iron, Pittsburgh	4.95c.

Long Terns

No. 24, unassorted 8-lb. coating	3.40c.
F.o.b. Pittsburgh	3.40c.
F.o.b. cars dock Pacific ports	4.10c.

Vitreous Enameling Stock

No. 20, f.o.b. Pittsburgh	3.10c.
---------------------------	--------

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	2.75c.
No. 28, Gary	2.85c.
No. 28, cars dock, Pacific Coast	3.35c.

Tin Plate

(F.o.b. Pittsburgh)

mill	\$5.25
Standard cokes, f.o.b. Gary	5.35
Standard cokes, f.o.b. cars dock Pacific ports	5.90

Terne Plate

(F.o.b. Pittsburgh)		
(Per Package, 20 x 28 in.)		
8-lb. coating	I.C.	\$10.00
15-lb. coating	I.C.	12.00
20-lb. coating	I.C.	13.00
25-lb. coating	I.C.	14.00
30-lb. coating	I.C.	15.25
40-lb. coating	I.C.	17.50

Hot-Rolled Hoops, Bands, Strips and Flats under 1/4 In.

	Base per lb.
All widths up to 24 in., P'gh.	1.85c.
All widths up to 24 in., Chicago	1.95c.
All widths up to 24 in., del'd Detroit	2.05c.
All widths up to 24 in., Birmingham	2.00c.
Cooperage stock, Pittsburgh	2.10c.
Cooperage stock, Chicago	2.20c.

Cold-Rolled Strips

	Base per Lb.
F.o.b. Pittsburgh	2.60c.
F.o.b. Cleveland	2.60c.
Del'd Chicago	2.88c.
F.o.b. Worcester	2.80c.

Fender Stock

No. 14, Pittsburgh or Cleveland	2.90c.
No. 14, Worcester	3.30c.
No. 20, Pittsburgh or Cleveland	3.30c.
No. 20, Worcester	3.70c.

Hot-Rolled Rail Steel Strips

Base per Lb	
F.o.b. Pittsburgh	1.70c
F.o.b. Chicago	1.75c
F.o.b. Birmingham	1.85c

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland.)

To Manufacturing Trade	Per Lb.
Bright wire	2.30c.
Spring wire	2.90c.
Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland, Worcester and Duluth prices are \$2 a ton above, Birmingham \$3 above, and Pacific Coast prices \$9 a ton above Pittsburgh or Cleveland.	

To Jobbing Trade

Qualified jobbers are entitled to a reduction of 20c. a 100 lb. from the base price on carload shipments to stock, and of 10c. a 100 lb. on less-carload shipments to stock.

	Base per Keg
Standard wire nails	\$2.60
Smooth coated nails	2.60
Galvanized nails:	
15 gage and coarser	4.60
16 gage and finer	5.10

	Base per 100 Lb.
Annealed fence wire.....	\$2.45
Galvanized fence wire	2.80
Polished staples	3.30
Galvanized staples	3.55
Barbed wire, galvanized	3.00
Woven wire fence, base column.....	63.00

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is \$2 above Pittsburgh); Duluth, Minn., and Worcester, Mass., mill prices are \$2 a ton over Pittsburgh (except for woven wire fence at Duluth which is \$3 over Pittsburgh), and Birmingham mill prices are \$3 a ton over Pittsburgh.

On wire nails, barbed wire, staples and fence wire, prices at Houston, Galveston and Corpus Christi, Tex., New Orleans, Lake Charles, La., and Mobile, Ala., are \$6 a ton over Pittsburgh, while Pacific Coast prices are \$8 over Pittsburgh. Reception: on fence wire Pacific Coast prices are \$11 a ton above Pittsburgh. On staples and barbed wire, prices of \$6 a ton above Pittsburgh are also quoted at Beaumont and Orange, Tex.

Wire Hoops, Twisted or Welded

	Off List
F.o.b. Pittsburgh	35 and 2½ off
F.o.b. Chicago	35 off

STEEL AND WROUGHT PIPE

AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh

District and Lorain, Ohio, Mills

F.o.b. Pittsburgh only on wrought iron pipe.

pipe.	<i>Butt Weld</i>			
	<i>Steel</i>	|	<i>Wrought Iron</i>	

BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts
(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

Machine bolts 70, 10 and 10
Carriage bolts 70, 10 and 10
Lag bolts 70, 10 and 10
Flange bolts, Nos. 1, 2, 3 and 7

Hot-pressed nuts, blank or tapped, square 70, 10 and 10

Hot-pressed nuts, blank or tapped, hexagonal 70, 10 and 10

C.p. and L. square or hex. nuts, blank or tapped 70, 10 and 10

Semi-finished hexagon nuts, U.S.S. all sizes 70, 10 and 10

Semi-finished hexagon nuts, S.A.E. 1/4 in. to 7/16 in. diameter, 70, 10 and 10

1/4 in. to 1 in. diameter, 70, 10 and 10

larger than 1 in. diameter, 70, 10 and 10

Store bolts in packages, Pittsburgh, 75

Store bolts in packages, Chicago, 75

Store bolts in packages, Cleveland, 75

Store bolts in bulk, Pgh., 83

Store bolts in bulk, Chicago, 83

Store bolts in bulk, Cleveland, 83

Tire bolts 60 and 10

Large Rivets
(1/2-in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh or Cleveland, \$2.90

F.o.b. Chicago, 3.00

F.o.b. Birmingham, 3.05

Small Rivets
(7/16-in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh 70 and 5

F.o.b. Cleveland 70 and 5

F.o.b. Chicago and Birm'g'm, 70 and 5

Cap and Set Screws
(Freight allowed up to but not exceeding 65c. per 100 lb. on lots of 200 lb. or more)

Per Cent Off List

Milled cap screws, 1 in. dia. and smaller 80, 10 and 10

Milled standard set screws, case hardened, 1 in. dia. and smaller, 75

Milled headless set screws, cut thread, 1/4 in. and smaller, 75

Upset hex. head cap screws, U.S.S. or S.A.E. thread, 1 in. dia. and smaller, 85

Upset set screws, cut and oval point, 75 and 10 to 80

Milled studs 65 to 65 and 10

Alloy and Stainless Steel

Alloy Steel Ingots

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem, Uncropped, \$40 per gross ton

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem, Base price, \$49 a gross ton

Alloy Steel Bars

Price del'd Detroit is \$52.

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.

Open-hearth grade, base, 2.45c.

Delivered price at Detroit is 2.60c.

S.A.E.

Series

Numbers

Differential

per 100 lb.

3000 (1/4% Nickel) 0.25

3100 (1/2% Nickel) 0.55

3200 (3/4% Nickel) 1.50

3300 (5% Nickel) 2.25

3400 Nickel Chromium 0.55

3500 Nickel Chromium 1.35

3600 Nickel Chromium 3.80

3700 Nickel Chromium 3.20

4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum) 0.50

4200 Chromium Molybdenum (0.25 to 0.40 Molybdenum) 0.70

4300 Nickel Molybdenum (0.20 to 0.30 Molybdenum) (1.50 to 2.00 Nickel) 1.05

5100 Chromium Steel (0.80 to 0.90 Chromium) 0.35

5200 Chromium Steel (0.80 to 1.10 Chromium) 0.45

5300 Chromium Spring Steel, base

4100 Chromium Vanadium Bar, 1.20

4200 Chromium Vanadium Spring Steel, 0.70

Chromium Nickel Vanadium, 1.50

Carbon Vanadium, 0.95

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. The differential for cold-drawn bars is 1/4c. per lb. higher with separate extras. Blooms, billets and slabs under 4x4 in. or equivalent are sold on the bar base. Slabs with a section area of 16 in. and 2 1/2 in. thick or over take the billet base. Sections 4x4 in. to 10x10 in. or equivalent carry a gross ton price, which is the net price for bars for the same analysis. Larger sizes carry extras.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 2.95c. base per lb.

STAINLESS STEEL No. 302

(17 to 19% Cr. 7 to 9% Ni. 0.08 to 0.20% C)

(Base Prices, f.o.b. Pittsburgh)

Per Lb.

Forging billets 19.55c.

Rolling slabs 15c.

Bars 25c.

Flats 26c.

Structural shapes 23c.

Sheets 23c.

Hot-rolled strip 20 1/2 c.

Cold-rolled strip 27c.

Drawn wire 23c.

Raw and Semi-Finished Steel

Carbon Steel Re-rolling Ingots

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham. Uncropped, \$29 per gross ton

Carbon Steel Forging Ingots

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Birmingham. Uncropped, \$31 per gross ton

Billets, Blooms and Slabs

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham.

Per Gross Ton

Re-rolling \$27.00

Forging quality 32.00

Delivered Detroit

Re-rolling \$30.00

Forging 35.00

Billets Only F.o.b. Duluth

Re-rolling \$29.00

Forging 34.00

Sheet Bars

F.o.b. Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton

Open-hearth or Bessemer, \$28.00

Skeip

F.o.b. Pittsburgh, Chicago, Youngstown, Buffalo, Coatesville, Pa., Sparrows Point, Md.

Per Lb.

Grooved 1.70c.

Universal 1.70c.

Sheared 1.70c.

Tube Rounds

Base per Lb.

F.o.b. Pittsburgh 1.80c.

F.o.b. Chicago 1.85c.

F.o.b. Cleveland 1.85c.

F.o.b. Buffalo 1.90c.

F.o.b. Birmingham 1.95c.

Wire Rods

(Common base)

Per Gross Ton

F.o.b. Pittsburgh \$38.00

F.o.b. Cleveland 38.00

F.o.b. Chicago 39.00

F.o.b. Anderson, Ind. 39.00

F.o.b. Youngstown 39.00

F.o.b. Worcester, Mass. 40.00

F.o.b. Birmingham 41.00

F.o.b. San Francisco 47.00

F.o.b. Galveston 44.00

CANADA

Pig Iron

Per gross ton:

Delivered Toronto

No. 1 fdy., sil. 2.25 to 2.75, \$21.00

No. 2 fdy., sil. 1.75 to 2.75, 20.50

Malleable 21.00

Delivered Montreal

No. 1 fdy., sil. 2.25 to 2.75, \$22.50

No. 2 fdy., sil. 1.75 to 2.25, 22.00

Malleable 22.50

Basic 22.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.

Per Gross Ton

Domestic, 80% (carload), \$35.00

Spiegeleisen

Per Gross Ton Furnace

Domestic, 19 to 21%, \$28.00

Electric Ferrosilicon

Per Gross Ton Delivered

50% (carloads), \$77.50

50% (ton lots), 85.00

75% (carloads), 126.00

75% (ton lots), 136.00

14% to 16% (f.o.b.) Welland, Ont. (in carloads) (duty paid), 31.00

14% to 16% (less carloads), 38.50

Silvery Iron

F.o.b. Jackson, Ohio, Furnace

Per Gross Ton

6% \$22.75

7% 23.75

8% 24.75

9% 25.75

10% 26.75

11% 27.75

12% 28.75

13% 29.75

14% 30.75

15% 31.75

16% 32.75

17% 33.75

18% 34.75

19% 35.75

20% 36.75

21% 37.75

22% 38.75

23% 39.75

24% 40.75

25% 41.75

26% 42.75

27% 43.75

28% 44.75

29% 45.75

30% 46.75

31% 47.75

32% 48.75

33% 49.75

34% 50.75

35% 51.75

36% 52.75

37% 53.75

38% 54.75

39% 55.75

40% 56.75

41% 57.75

42% 58.75

43% 59.75

44% 60.75

45% 61.75

46% 62.75

47% 63.75

48% 64.75

49% 65.75

50% 66.75

51% 67.75

52% 68.75

53% 69.75

54% 70.75

55% 71.75

56% 72.75

57% 73.75

58% 74.75

59% 75.75

60% 76.75

61% 77.75

62% 78.75

63% 79.75

64% 80.75

65% 81.75

66% 82.75

67% 83.75

68% 84.75

69% 85.75

70% 86.75

71% 87.75

72% 88.75

73% 89.75

74% 90.75

75% 91.75

76% 92.75

77% 93.75

78% 94.75

79% 95.75

80% 96.75

81% 97.75

82% 98.75

83% 99.75

84% 100.75

85% 101.75

86% 102.75

87% 103.75

88% 104.75

89% 105.75

90% 106.75

91% 107.75

92% 108.75

Iron and Steel Scrap

PITTSBURGH

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel	\$13.00 to \$13.50
No. 2 heavy melting steel	12.00 to 12.50
No. 2 railroad wrought	13.00 to 13.50
Scrap rails	14.00 to 14.50
Rails 3 ft. and under	14.50 to 15.00
Compressed sheet steel	12.75 to 13.25
Hand bundled sheet steel	12.00 to 12.50
Hvy. steel sheet turnings	10.50 to 11.00
Machine shop turnings	9.00 to 9.50
Short shov. turnings	9.00 to 9.50
Short mixed borings and turnings	6.75 to 7.25
Cast iron borings	6.75 to 7.25
Cast iron car wheels	12.75 to 13.25
Heavy breakable cast	12.25 to 12.75
No. 1 cast	13.50 to 14.00
Hair, knuckles and couplers	15.00 to 15.50
Rail, coil and leaf springs	15.00 to 15.50
Roller steel wheels	15.00 to 15.50
Low phos. billet crops	15.00 to 15.50
Low phos. sheet bar crops	15.00 to 15.50
Low phos. plate scrap	14.00 to 14.50
Low phos. punchings	14.00 to 14.50
Steel car axles	15.00 to 15.50

CHICAGO

Delivered Chicago district consumers:	
Per Gross Ton	
Heavy melting steel	\$11.25 to \$11.75
Automobile hvy. melt. steel	11.00 to 11.50
Shoveling steel	11.25 to 11.75
Hydraulic comp. sheets	10.50 to 11.00
Drop forge flashings	9.75 to 10.25
No. 1 busheling	10.50 to 11.00
Roller car wheels	12.00 to 12.50
Railroad tires	12.50 to 13.00
Railroad leaf springs	12.00 to 12.50
Axle turnings	10.00 to 10.50
Steel couplers and knuckles	12.00 to 12.50
Coil springs	12.00 to 12.50
Axle turnings (elec. fur.)	11.00 to 11.50
Low phos. punchings	12.50 to 13.00
Low phos. plates, 12 in. and under	13.50 to 14.00
Cast iron borings	7.00 to 7.50
Short shoveling turnings	7.00 to 7.50
Machine shop turnings	6.00 to 6.50
Revolving rails	12.50 to 13.00
Steel rails, less than 3 ft.	13.00 to 13.50
Steel rails, less than 2 ft.	13.50 to 14.00
Angle bars, steel	12.50 to 13.00
Cast iron car wheels	12.00 to 12.50
Railroad malleable	12.50 to 13.00
Agricultural malleable	9.50 to 10.00

PHILADELPHIA

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel	\$11.50 to \$12.00
No. 2 heavy melting steel	10.00 to 10.50
No. 2 railroad wrought	11.00 to 11.50
Bundled sheets	9.00
Hydraulic compressed, new	11.00 to 11.50
Hydraulic compressed, old	7.50 to 8.00
Machine shop turnings	6.50 to 7.00
Heavy axle turnings	8.50 to 9.00
Cast borings	5.00 to 5.50
Heavy breakable cast	10.50 to 11.00
Store plate (steel work)	9.00 to 9.50
No. 1 low phos. heavy	15.00 to 15.50
Couplers and knuckles	14.50 to 15.00
Roller steel wheels	14.50 to 15.00
No. 1 blast furnace	5.00 to 5.50
Spec. iron and steel pipe	8.00
Shafting	17.00 to 17.50
Steel axles	16.50 to 17.00
No. 1 forge fire	9.50 to 10.00
Cast iron car wheels	12.25 to 12.75
No. 1 cast	11.00 to 11.50
Cast borings (chem)	12.00 to 14.00
Steel rails for rolling	12.00

CINCINNATI

Dealers' buying prices per gross ton:	
Heavy melting steel	\$9.00 to \$9.50
Scrap rails for melting	9.00 to 9.50
Loose sheet clippings	5.50 to 6.00
Bundled sheets	7.00 to 7.50
Cast iron borings	3.50 to 4.00
Machine shop turnings	5.50 to 6.00
No. 1 busheling	7.00 to 7.50
No. 2 busheling	8.75 to 9.25
Rails for rolling	10.00 to 10.50
No. 1 locomotive tires	8.25 to 8.75
Short rails	12.50 to 13.00
Cast iron car wheels	9.00 to 9.50
No. 1 machinery cast	10.25 to 10.75
No. 1 railroad cast	9.50 to 10.00
Burnt cast	7.00 to 7.50
Store plate	7.00 to 7.50
Agricultural malleable	9.00 to 9.50
Railroad malleable	10.00 to 10.50

CLEVELAND

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel	\$11.00 to \$11.50
No. 2 heavy melting steel	10.50 to 11.00
Compressed sheet steel	10.50 to 11.00
Light bundled sheet stampings	8.50 to 9.00
Drop forge flashings	10.00 to 10.50
Machine shop turnings	8.00 to 8.50
Short shoveling turnings	8.00 to 8.50
No. 1 busheling	9.50 to 10.00
Steel axle turnings	9.50 to 10.00
Low phos. billet crops	14.50 to 15.00
Cast iron borings	8.00 to 8.50
Mixed borings and short turnings	8.00 to 8.50
No. 2 busheling	8.00 to 8.50
No. 1 cast	12.50 to 13.00
Railroad grate bars	7.00 to 7.50
Store plate	8.00 to 8.50
Rails under 3 ft.	15.00 to 15.50
Trail for rolling	15.50 to 16.00
Railroad malleable	13.00 to 13.50
Cast iron car wheels	12.00

BUFFALO

Per gross ton, f.o.b. Buffalo consumers' plants:	
No. 1 heavy melting steel	\$12.50
No. 2 heavy melting scrap	\$11.00 to \$11.50
Scrap rails	12.00 to 12.50
New hydraulic comp. sheets	11.00 to 11.50
Old hydraulic comp. sheets	10.00 to 10.50
Drop forge flashings	11.00 to 11.50
No. 1 busheling	11.00 to 11.50
Hvy. steel axle turnings	8.00 to 8.50
Machine shop turnings	6.25
Knuckles and couplers	13.50 to 14.00
Coil and leaf springs	13.50 to 14.00
Roller steel wheels	13.50 to 14.00
Low phos. billet crops	13.75 to 14.25
Short shov. steel turnings	7.25 to 7.50
Short mixed borings and turnings	7.25 to 7.50
Cast iron borings	7.25 to 7.50
No. 2 busheling	7.50 to 8.00
Steel car axles	13.50 to 14.00
Iron axles	13.50 to 14.00
No. 1 machinery cast	12.00 to 12.50
No. 1 cupola cast	10.50 to 11.00
Store plate	10.00 to 10.50
Steel rails, 3 ft. and under	14.00 to 14.50
Cast iron car wheels	11.50 to 12.00
Industrial malleable	12.50 to 13.00
Railroad malleable	12.50 to 13.00
Chemical borings	8.50 to 9.00

BOSTON

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel	\$9.00 to \$9.25
No. 1 heavy melting steel	7.00 to 7.25
Scrap T rails	7.75 to 8.00
No. 2 steel	8.25 to 8.50
No. 2 steel	6.00 to 6.50
Breakable cast	6.50 to 6.75
Machine shop turnings	3.00 to 3.25
Bundled skeleton, long	6.00 to 6.25
Forge flashings	6.00 to 6.25
Shafting	11.50 to 12.00
Steel car axles	11.50 to 12.00
Cast iron borings, chemical	6.50 to 7.00
Store plate	4.00 to 4.25
Per gross ton delivered consumers' yards:	
Textile cast	\$9.00 to \$9.50
No. 1 machinery cast	9.00 to 9.50
Store plate	6.00 to 6.50
Railroad malleable	11.00 to 11.50

* Delivered local army base.

NEW YORK

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel	\$8.00 to \$9.00
No. 2 heavy melting steel	*6.50 to *7.50
Heavy breakable cast	6.75 to 7.25
No. 1 machinery cast	7.50 to 8.00
No. 2 cast	6.50 to 7.00
Store plate	6.00 to 6.25
Steel car axles	12.50 to 13.00
No. 1 railroad wrought	7.50 to 8.00
No. 1 yard wrought, long	6.50 to 7.00
Spec. iron and steel pipe	4.50 to 5.00
Forge fire	5.50 to 6.00
Rails for rolling	9.00 to 9.50
Short shoveling turnings	2.50 to 3.00
Machine shop turnings	2.50 to 3.00
Cast borings	3.50 to 3.75
No. 1 blast furnace	2.00 to 2.50
Cast borings (chemical)	11.00 to 11.50
Unprepared yard iron and steel	4.50 to 5.00

Per gross ton, delivered local foundries:	
No. 1 machinery cast	\$10.50
No. 1 hvy. cast (cupola size)	9.50
No. 2 cast	8.00

* For direct car loading only.
* Loading on barge.

BIRMINGHAM

Per gross ton delivered consumers' yards:	
Heavy melting steel	\$9.00 to \$9.50
Scrap steel rails	10.00 to 10.50
Short shoveling turnings	7.00
Store plates	7.00
Steel axles	11.50
Iron axles	11.50
No. 1 railroad wrought	7.00
Rails for rolling	12.50
No. 1 cast	9.50 to 10.00
Tramcar wheels	10.00
Cast iron borings, chem.	8.00

ST. LOUIS

Per gross ton delivered consumers' yards:	
Selected heavy steel	\$9.25 to \$9.75
No. 1 heavy melting	8.50 to 9.00
No. 2 heavy melting	7.50 to 8.00
No. 1 locomotive tires	9.75 to 10.25
Misc. stand-sec. rails	10.00 to 10.50
Railroad springs	11.00 to 11.50
Bundled sheets	6.00 to 6.50
No. 2 railroad wrought	9.25 to 9.75
No. 1 busheling	9.00 to 9.50
Cast iron borings and shoveling turnings	
Rails for rolling	4.00 to 4.50
Machine shop turnings	4.00 to 4.50
Heavy turnings	5.50 to 6.00
Steel car axles	13.50 to 14.00
Iron car axles	15.00 to 16.00
No. 1 railroad wrought	7.50 to 8.00
Steel rails less than 3 ft.	11.75 to 12.25
Steel angle bars	9.50 to 10.00
Cast iron car wheels	8.25 to 8.75
Railroad malleable	9.00 to 9.50
No. 1 railroad cast	9.00 to 9.50
Store plate	6.50 to 7.00
Agricult. malleable	8.50 to 9.00

DETROIT

Dealers' buying prices per gross ton:	
Heavy melting steel	\$9.00 to \$9.50
Borings and short turnings	6.50 to 6.00

ORES, FLUORSPAR, COKE, FUEL, REFRACTORIES

Lake Superior Ores

Delivered Lower Lake Ports	
Per Gross Ton	
Old range, Bessemer, 51.5% iron	\$4.80
Old range, non-Bessemer, 51.50% iron	4.65
Mesabi, Bessemer, 51.50% iron	4.65
Mesabi, non-Bessemer, 51.50% iron	4.50
High phosphorus, 51.50% iron	4.40

Foreign Ore

C.I.F. Philadelphia or Baltimore	
Per Unit	
Iron, low phos., copper free, 55 to 58% iron, dry Spanish or Algerian	9.50c.
Iron, low phos., Swedish, average 68% iron	9.50c.
Iron, basic or foundry, Swedish, aver. 65% iron	9c.
Iron, basic or foundry, Russian, aver. 65% iron	9c.
Manganese, Caucasian, washed 52%	26c.
Manganese, African, Indian, 44-48%	21c.
Manganese, African, Indian, 49-51%	24c.
Manganese, Brazilian, 46 to 48%	20c.

Per Net Ton Unit	
Tungsten, Chinese, wolframite, duty paid, delivered*	\$17.50 to \$18.50
Tungsten, domestic scheelite, delivered*	17.00

Per Gross Ton	
Chrome, 45%, Cr ₂ O ₃ , crude, c.i.f. Atlantic Seaboard	\$17.00
Chrome, 48%, Cr ₂ O ₃ , c.i.f. Atlantic Seaboard	20.00

*Quotations nominal in absence of sales.
†Nominal; no supplies available.

Fluorspar

Per Net Ton	
Domestic, washed gravel, 85-5 f.o.b. Kentucky and Illinois mines for all-rail shipment	\$15.50 to \$16.00
Same grade for Ohio River barge shipment for Kentucky and Illinois River landings	17.50
No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines	\$15.50 to 16.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic port, duty paid	19.00
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2% silicon, f.o.b. Illinois and Kentucky mines	30.00

COKE, COAL AND FUEL OIL

Coke	
Per Net Ton	
Furnace, f.o.b. Connellsville Prompt	\$3.35
Foundry, f.o.b. Connellsville Prompt	\$4.60 to 5.10
Foundry, by-product, Chicago ovens, for delivery outside switching district	8.50
Foundry, by-product, delivered in Chicago switching district	9.25
Foundry, by-product, New England, delivered	11.00
Foundry, by-product, Newark or Jersey City, del'd	8.20 to 8.81
Foundry, by-product, Phila.	9.00

Long turnings	\$5.00 to \$5.50
No. 1 machinery cast	10.50 to 11.00
Automotive cast	10.75 to 11.25
Hydraulic comp. sheets	9.50 to 10.00
Store plate	6.50 to 7.00
New factory busheling	7.75 to 8.25
Old No. 2 busheling	5.00 to 5.50
Sheet clippings	6.00 to 6.50
Flashings	8.50 to 9.00
Low phos. plate scrap	9.75 to 10.25

CANADA

Dealers' buying prices per gross ton:	
Toronto Montreal	
Heavy melting steel	\$7.00 \$7.00
Rails scrap	8.00 8.00
Machine shop turnings	3.00 3.00
Boiler plate	4.50 4.50
Heavy axle turnings	4.50 4.50
Cast borings	4.00 3.50
Steel borings	2.00 1.50
Wrought pipe	3.50 3.50
Steel axles	7.00 3.00
Axles, wrought iron	7.00 3.00
No. 1 machinery cast	9.00 9.00
Store plate	5.50 5.00
Standard car wheels	7.25 7.00
Malleable	6.75 7.00

Coal

Per Net Ton	
Mine run steam coal, f.o.b. W. Pa. mines	\$1.80 to \$2.00
Mine run coking coal f.o.b. W. Pa. mines	2.05 to 2.10
Gas coal, 4-in. f.o.b. Pa. mines	2.25 to 2.30
Mine run gas coal f.o.b. Pa. mines	2.05 to 2.10
Steam slack, f.o.b. W. Pa. mines	1.55 to 1.60
Gas slack, f.o.b. W. Pa. mines	1.90 to 2.10

Fuel Oil

Per Gal. f.o.b. Bayonne, N. J.	
No. 3 distillate	4.00
No. 4 industrial	3.50
Per Gal. f.o.b. Baltimore	
No. 3 distillate	4.00
No. 4 industrial	3.50
Per Gal. del'd Chicago	
No. 3 industrial fuel oil	3.80
No. 5 industrial fuel oil	3.50
Per Gal. f.o.b. Cleveland	
No. 3 distillate	5.00
No. 4 industrial	5.20
No. 5 industrial	4.00

REFRACTORIES

Fire Clay Brick	
Per 1000 f.o.b. Works	
High-heat intermediate Duty Brick	Duty Brick
Pennsylvania	\$45.00 \$40.00
Maryland	45.00 40.00
New Jersey	55.00 45.00
Ohio	45.00 40.00
Kentucky	45.00 40.00
Missouri	45.00 40.00
Illinois	45.00 40.00
Ground fire clay, per ton	7.00

Chrome Brick

Per Net Ton	
Standard size	\$45.00

Silica Brick

Per 1000 f.o.b. Works	
Pennsylvania	\$45.00
Chicago	50.00
Birmingham	55.00
Silica clay, per ton	8.00

Magnesite Brick

Per Net Ton	
Standard size, burned, f.o.b. Baltimore and Chester, Pa.	\$45.00
Unburned, f.o.b. Baltimore	55.00
Imported grain magnesite, f.o.b. Baltimore and Chester, Pa.	45.00
Domestic grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00
Domestic, f.o.b. Chewelah, Wash.	22.00

Warehouse Prices for Steel Products

PITTSBURGH

Base per Lb.	
Plates	3.15c
Structural shapes	3.15c
Soft steel bars and small shapes	2.90c
Reinforcing steel bars	2.90c
Cold-finished and screw stock:	
Rounds and hexagons	3.45c
Squares and flats	3.45c
Hoops and bands under 1/4 in.	3.20c
Hot-rolled annealed sheets (No. 24)	3.30c
25 or more bundles	3.30c
Galv. sheets (No. 24), 25 or more	3.95c
Hot-rolled sheets (No. 10)	2.95c
Galv. corrug. sheets (No. 28), per	
square (more than 3750 lb.)	\$3.69
Spikes, large	2.90c
Track bolts, all sizes, per 100 count	2.83c
Machine bolts, 100 count	65 per cent off list.
Carriage bolts, 100 count	65 per cent off list.
Nuts, all styles, 100 count	65 per cent off list.
Large rivets, base per 100 lb.	\$3.50
Wire, black, soft ann'l'd, base per	
100 lb.	\$2.70
Wire, galv., soft, base per 100 lb.	\$2.925
Common wire nails, per keg	\$2.834
Cement coated nails, per keg	\$2.834

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 999 lb.
 *Delivered in Pittsburgh switching district.

CHICAGO

Base per Lb.	
Plates and structural shapes	3.20c
Soft steel bars	2.95c
Cold-fn. steel bars:	
Rounds and hexagons	3.50c
Flats and squares	3.50c
Hot-rolled strip	3.30c
Hot-rolled annealed sheets (No. 24)	3.85c
Galv. sheets (No. 24)	4.55c
Hot-rolled sheets (No. 10)	3.65c
Spikes (keg lots)	4.65c
Track bolts (keg lots)	3.65c
Rivets, structural (keg lots)	3.75c
Rivets, boiler (keg lots)	3.75c
Machine bolts	60 and 5
Carriage bolts	60 and 5
Lag screws	60 and 5
Hot-pressed nuts, sq. tap or	
blank	60 and 5
Hot-pressed nuts, hex. tap or	
blank	60 and 5
Hex. head cap screws	80
Cup point set screws	70 and 10
Flat head bright wood screws	37 1/2 and 10
Spring cotter	50
Store bolts in full packages	70
Rd. hd. tank rivets, 7/16 in. and	
smaller	57 1/2
Wrought washers	\$4.00 off list
No. 8 black ann'l'd wire per 100 lb.	\$3.85
Com. wire nails, base per keg	3.05
Cement c'd nails, base per keg	3.05

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 999 lb. All prices are f.o.b. consumers' plants within the Chicago switching district.

NEW YORK

Base per Lb.	
Plates, 1/4 in. and heavier	3.40c
Structural shapes	3.37c
Soft steel bars, small shapes	3.22c

Iron bars	3.22c
Iron bars, swed. charcoal	6.75c to 7.25c
Cold-fn. shafting and screw stock:	
Rounds and hexagons	3.92c
Flats and squares	4.42c
Cold-rolled, strip, soft and quarter	
hard	3.32c
Hoops	3.52c
Bands	3.52c
Hot-rolled sheets (No. 10)	3.27c
Hot-rolled ann'l'd sheets (No. 24)	3.85c
Galvanized sheets (No. 24)	4.50c
Long term sheets (No. 24)	5.20c
Standard tool steel	11.00c
Wire, black annealed (No. 10)	3.25c
Wire, galv. (No. 10)	3.85c
Tire steel, 1 x 1/2 in. and larger	3.65c
Open hearth spring steel	4.00c to 10.00c
Common wire nails, base, per keg	\$3.21

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

ST. LOUIS

Base per Lb.	
Plates and struc. shapes	3.44c
Bars, soft steel or iron	3.19c
Cold-fn. rounds, shafting, screw	
stock	3.74c
Hot-rolled annealed sheets (No. 24)	4.09c
Galv. sheets (No. 24)	4.79c
Hot-rolled sheets (No. 10)	3.29c
Black corrug. sheets (No. 24)	4.09c
*Galv. corrug. sheets	4.79c
Structural rivets	3.99c
Boiler rivets	4.09c
Tank rivets, 7/16 in. and smaller	55
Machining and carriage bolts, lag screws, fittings up bolts, bolt ends, plug bolts, hot-pressed nuts, square and hexagon, tapped or blank, semi-finished nuts:	
1000 lb. or over	70 and 10
200 to 999 lb.	67 1/2 and 10
100 to 199 lb.	65 and 10
Less than 100 lb.	60 and 10

*No. 26 and lighter take special prices.

PHILADELPHIA

Base per Lb.	
*Plates, 1/4-in. and heavier	2.95c
*Structural shapes	2.95c
*Soft steel bars, small shapes, iron bars (except bands)	2.90c
*Reinforce. steel bars, sq. twisted and deformed	2.955c
Cold-finished steel bars	3.73c
*Steel hoops	3.40c
*Steel bands, No. 12 and 3/16 in., incl.	3.15c
Spring steel	5.00c
*Hot-rolled anneal. sheets (No. 24)	3.55c
*Galvanized sheets (No. 24)	4.25c
*Hot-rolled annealed sheets (No. 10)	3.05c
Diam. pat. floor plates, 1/4 in.	4.95c
Swedish iron bars	6.25c

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.

*Base prices subject to deduction on order aggregating 4000 lb. or over.
 †For 50 bundles or over.
 ‡For less than 2000 lb.

CLEVELAND

Base per Lb.	
Plates and struc. shapes	3.31c
Soft steel bars	2.95c
Reinforce. steel bars	2.10c
Cold-finished steel bars	3.40c
Flat-rolled steel under 1/4 in.	3.36c
Cold-finished strip	3.90c
Hot-rolled annealed sheets (No. 24)	3.96c
Galvanized sheets (No. 24)	4.61c
Hot-rolled sheets (No. 10)	3.11c
Hot-rolled 3/16 in. 24 to 48 in. wide sheets	3.56c
Black ann'l'd wire, per 100 lb.	\$2.65
No. 9 galv. wire, per 100 lb.	3.00
Com. wire nails, base per keg	2.40

*Plus mill, size and quantity extras.
 †Outside delivery 10c. less.

CINCINNATI

Base per Lb.	
Plates and struc. shapes	3.40c
Bars, soft steel or iron	3.15c
New billet reinforce. bars	3.25c
Rail steel reinforce. bars	3.25c
Hoops and bands, 3/16 in. and lighter	3.45c
Cold-finished bars	3.70c
Hot-rolled annealed sheets (No. 24)	4.09c
Galv. sheets (No. 24)	4.70c
Hot-rolled sheets (No. 10)	3.20c
Structural rivets	4.35c
Small rivets	55 per cent off list
No. 9 ann'l'd wire, per 100 lb. (1000 lb. or over)	\$2.91
Com. wire nails, base per keg (1 to 24 kegs)	3.50
25 to 50 kegs	3.30
Larger quantities	3.10
Cement c'd nails, base 100-lb. keg	3.50
Chain, 1-in., per 100 lb.	8.35
Net per 100 Ft.	
Seamless steel boiler tubes, 2-in.	\$19.03
4-in.	44.96
Lap-welded steel boiler tubes, 2-in.	18.10
4-in.	42.32

BUFFALO

Base per Lb.	
Plates	3.27c
Struc. shapes	3.25c
Soft steel bars	3.00c
Reinforcing bars	2.60c
Cold-fn. flats and sq.	3.55c
Round and hex.	3.55c
Cold-rolled strip steel	3.19c
Hot-rolled annealed sheets (No. 24)	4.95c
Heavy hot-rolled sheets, 3/16 in., 24 to 48 in. wide	3.62c
Galv. sheets (No. 24)	4.70c
Bands	3.42c
Hoops	3.42c
Hot-rolled annealed sheets	3.17c
Com. wire nails, base per keg	\$3.25
Black wire, base per 100 lb.	3.55c

BOSTON

Per Lb. Base	
Beams, channels, angles, tees, zees	3.52c
H beams and shapes	3.52c
Plates—sheared, tank and univ.	
mill, 1/4 in. thick and heavier	3.53c
Floor plates, diamond pattern	3.53c
Bar and bar shapes (mild steel)	3.30c
Bands 3/16 in. thick and No. 12 ga. incl.	3.60c to 4.60c
Half rounds, half ovals, ovals and bevels	4.55c
Tire steel	4.55c
Cold-finished rounds and hexagons	3.25c
Cold-rolled strip steel	3.245c

Cold-finished squares and flats	4.36c
Blue annealed sheets, No. 10 gal.	3.60c
One pass cold-rolled sheets No. 24	4.15c
Galvanized steel sheets, No. 24 ga.	4.85c
Lead coated sheets, No. 24 ga.	5.30c

Prices delivered by truck in metropolitan Boston, subject to quantity differentials.

MILWAUKEE

Base per Lb.	
Plates and structural shapes	3.31c
Soft steel bars	3.06c
Hot-rolled strip	3.41c
Hot-rolled sheets (No. 10)	3.16c
Hot-rolled annealed sheets (No. 24)	3.96c
Galvanized sheets (No. 24)	4.66c
Cold-finished steel bars	4.36c
Cold-rolled strip	3.90c
Structural rivets (keg lots)	3.86c
Boiler rivets (keg lots)	3.96c
Track spikes (keg lots)	3.71c
Track bolts (keg lots)	4.86c
Black annealed wire	3.10c
Com. wire nails	2.90c
Cement coated nails	2.90c
Machine bolts (100 pcs. and over)	65
Carriage bolts (100 pcs. and over)	65
Hot-pressed nuts, sq. and hex., tapped or blank (keg lots)	60 and 5

Prices given above are delivered Milwaukee.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 999 lb. On galvanized and No. 24 hot-rolled annealed sheets the prices given apply on orders of 400 to 3499 lb. On cold-finished bars the prices are for orders of 300 to 499 lb.

PACIFIC COAST

Base per Lb.				
	San Fran.	Los Angeles	Seattle	
Plates, tank and U. M.	3.55c	3.70c	3.55c	
Shapes, standard	3.55c	3.70c	3.55c	
Soft steel bars	3.60c	3.70c	3.60c	
Reinforcing bars	3.50c	3.50c	3.50c	
Hot-rolled annealed sheets (No. 24)	4.40c	4.45c	4.40c	
Hot-rolled sheets (No. 10)	3.75c	3.80c	3.75c	
Galv. sheets (No. 24)	5.00c	5.05c	5.00c	
Cold finished steel:				
Rounds	5.95c	5.95c	4.75c	
Squares and hexagons	7.20c	7.20c	6.00c	
Flats	7.70c	7.70c	7.00c	
Common wire nails—base per keg				
less carload	\$3.40	\$3.25	\$3.30	

All items subject to differentials for quantity.

TOOL STEEL

Prices are same for warehouse distribution at all points on or East of Mississippi River. West of Mississippi quotations are 1c. a lb. higher.

Base per Lb.	
High speed	37c
High carbon chrome	37c
Oil hardening	22c
Extra	17c
Regular	14c

December Industrial Activity Analyzed

ACTIVITY in manufacturing increased in December over November, more employees were at work, and a longer work week resulted in higher weekly earnings per employee, according to the regular monthly service letter just published by the National Industrial Conference Board.

While hourly earnings in the 25 manufacturing industries combined averaged 59.3c. in December as compared with 59.4c. in November,

or 0.2 per cent lower, weekly earnings averaged \$20.71 against \$20.07, or 3.2 per cent higher. This increase was due to a rise in the average work week from 33.9 hr. in November to 35.0 hr. in December, or 3.2 per cent. Since there was no change in the cost of living during these two months, the rise in actual weekly earnings was a real increase of 3.2 per cent.

The number of workers employed was 2.7 per cent larger in December than in November, the total number of hours worked by these employees was 5.9 per cent larger and their combined payroll likewise 5.9 per cent.

Would Give Labor Coal Code Membership

WASHINGTON, Feb. 5.—Organized labor is at least getting partially favorable response to its demands for recognition on code authorities. At the insistence of John L. Lewis, president, United Mine Workers of America, it forced through an amendment to the bituminous coal code, just submitted to NIRC, providing for labor representation on all divisional and subdivisional code authorities. The amendment was formally submitted by the National Bituminous Coal Industrial Board.

Lead Price Reductions of \$4 a Ton Develop Most Active Buying of Year

Copper Sales Running Well Ahead of January Business—
Tin Market Adversely Affected by Gold Clause
Decision Uncertainty—Zinc Dull

NEW YORK, Feb. 5.—With January bookings of Blue Eagle copper having totaled 27,052 tons, the highest figure since the code became effective, business this month is already starting off at an even better rate. Transactions on Friday amounted to more than 2500 tons and sales yesterday topped 1500 tons, bringing the total for the month to date to 4300 tons. While January bookings were 3000 tons short of absorbing the "book" established under the code, they compared with 15,500 tons sold in December, and with approximately 49,000 tons last June, prior to the code. The Blue Eagle price is holding at 9c. a lb., Connecticut Valley, and the Continental market is quiet, with quotations ranging from 6.70c. to 6.75c. a lb., usual Continental base ports. Informal

discussions leading to the calling of an international conference on production curtailment are being carried on here, but no formal announcement is expected in the near future.

Tin

The market continues rather dull and will probably remain in that state until after the Supreme Court decision on the gold clause is announced. Price movements are confined largely to fluctuations in sterling. Spot metal is quotable today at 51.15c. a lb. and the range over the past week has been confined to 30 points. The scarcity of spot tin is still noticeable, with some future positions quoted at a half cent less than spot. At London this morning Standard spot was quotable at £233 and futures

at £228 17s. 6d. Straits metal was quotable in London at £233 5s., while the Eastern market was closed on account of a Chinese holiday.

Lead

A decline of \$2 a ton in lead prices, which was posted on Wednesday, and a further drop of the same amount on Friday developed considerable buying activity in this market. While business at the 3.70c. a lb., New York, and 3.55c., St. Louis level, had been fair over the last several weeks, large buying had not been attracted, and the reduction may be considered as successful in breaking the deadlock. One seller quoted prices 10 points above the general level yesterday but secured no business and today is merely asking a premium of \$1 a ton, or 3.55c., New York, for March delivery, to its regular customers. Its price in the West is 3.35c., St. Louis, and other sellers are quoting 3.50c., New York, on both February and March bookings. February lead is estimated to be about 75 per cent sold, and a fair amount of March metal has been booked. Consumption is very well maintained and buying is distributed throughout the principal consuming industries. In the Joplin market on Saturday, the ore price had fallen to \$32 a ton, a decline of \$4 from the recent quotation.

Zinc

This market continues very quiet, but sentiment has improved slightly as a result of continued discussion of production curtailment. Reduction of output by about 25 per cent is generally considered necessary to bring stability to the market, but the various interests concerned are not in agreement as to the best method of accomplishing this end. Sales of spelter last week totaled about 1200 tons, a considerable decline from the 2300 tons sold in the previous comparable period. Prices are unchanged and relatively firm at 4.05c. a lb., New York, and 3.70c., East St. Louis. The market on concentrates is holding at \$25 and \$26 a ton for the flotation and mill grades respectively. Production last week rose to 8800 tons, against sales of 6600 tons and shipments of 7400 tons.

Ingot Brass and Bronze

The Non-Ferrous Ingot Metal Institute reports that, in the 28-day period ended Jan. 25, the average prices paid for commercial 80-10-10 and commercial 85-5-5-5 brass ingots were 9.787c. a lb. and 8.263c. a lb. respectively. In the preceding comparable period, the corresponding figures were 9.794c. a lb. and 8.268c. a lb. respectively.

The Week's Prices. Cents Per Pound for Early Delivery

	Jan. 30	Jan. 31	Feb. 1	Feb. 2	Feb. 4	Feb. 5
Electrolytic copper, N. Y.*	8.75	8.75	8.75	8.75	8.75	8.75
Lake copper, N. Y.	9.12½	9.12½	9.12½	9.12½	9.12½	9.12½
Straits tin, Spot, New York	50.85	51.12½	51.00	51.10	51.10	51.15
Zinc, East St. Louis	3.70	3.70	3.70	3.70	3.70	3.70
Zinc, New York	4.05	4.05	4.05	4.05	4.05	4.05
Lead, St. Louis	3.45	3.45	3.35	3.35	3.35	3.35
Lead, New York	3.60	3.60	3.50	3.50	3.50	3.50

*Refinery quotations; price ¼c. higher delivered in Connecticut.

Aluminum, virgin 99 per cent plus, 19c. to 22c. a lb., delivered.
Aluminum, remelt No. 12 (alloy), carload lots delivered, 14c. a lb., average for week.
Nickel electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.
Antimony, 14.50c. a lb., New York.
Brass ingots, 85-5-5-5, 8.25c. a lb., New York and Philadelphia.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig.	52.25c. to 53.25c.
Tin, bar	54.25c. to 55.25c.
Copper, Lake	10.25c. to 11.00c.
Copper, electrolytic	10.00c. to 10.50c.
Copper, castings	9.75c. to 10.75c.
*Copper sheets, hot-rolled	16.00c.
*High brass sheets	14.25c.
*Seamless brass tubes	16.00c.
*Seamless copper tubes	16.25c.
*Brass rods	12.75c.
Zinc, slabs	5.75c. to 6.75c.
Zinc, sheets (No. 9), casks, 1200 lb. and over	10.25c.
Lead, American pig.	4.50c. to 5.50c.
Lead, bar	5.50c. to 6.50c.
Lead, sheets	7.25c.
Antimony, Asiatic	15.50c. to 16.50c.
Alum., virgin, 99 per cent, plus	23.30c.
Alum., No. 1 for remelt-ing, 98 to 99 per cent	18.00c. to 19.00c.
Solder, ½ and ¾	30.00c. to 31.00c.
Babbitt metal, commercial grades	25.00c. to 60.00c.

*These prices are also for delivery from Chicago and Cleveland warehouses.

From Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig.	54.25c.
Tin, bar	56.25c.

Copper, Lake	10.00c.
Copper, electrolytic	10.00c.
Copper, castings	9.75c.
Zinc, slab	5.50c. to 5.75c.
Lead, American pig.	4.50c. to 4.75c.
Lead, bar	7.75c.
Antimony, Asiatic	16.50c.
Babbitt metal, medium grade	18.50c.
Babbitt metal, high grade	59.50c.
Solder, ½ and ¾	33.00c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	5.37½c.	6.12½c.
Copper, hvy. and wire	5.25c.	5.75c.
Copper, light and bottoms	4.25c.	4.75c.
Brass, heavy	2.75c.	3.37½c.
Brass, light	2.00c.	2.75c.
Hvy. machine composition	4.37½c.	4.87½c.
No. 1 yel. brass turnings	3.62½c.	4.12½c.
No. 1 red brass or compos. turnings	3.87½c.	4.37½c.
Lead, heavy	2.62½c.	3.00c.
Zinc	1.87½c.	2.25c.
Cast aluminum	9.62½c.	10.75c.
Sheet aluminum	11.00c.	12.50c.

Stove and Tractor Plants Active in St. Louis Area

ST. LOUIS, Feb. 5.—While new business in pig iron is light, shipments against contracts continued heavy during the last week in January, the month's total being ahead of the first month of last year. A leading maker of tractors in the St. Louis territory reports sufficient business booked to insure capacity operations for the next six months. A substantial volume of orders has come from sections which have not previously used this power. Farm implement makers report actual orders and definite prospects for business the most favorable in five years. Several stove plants in the Belleville district are operating at the highest percentage of capacity in several years. Job foundries report improved business.

While the scrap market is somewhat easier than it has been, in sympathy with weakness felt in other markets, there has been no recession so far in dealers' prices here. Mills are marking time in their purchasing plans for the present, but dealers say that indications point to some buying shortly.

The Illinois Highway Commission will open bids on Friday for highway projects requiring 2500 tons of structural steel and 700 tons of reinforcing bars. Kalman Steel Corp. was awarded 400 tons of reinforcing bars for the Page Avenue viaduct here. Finished iron and steel generally are quiet.

Coast Mills Running At High Rate

SAN FRANCISCO, Feb. 4.—Bookings in southern California accounted for the major portion of the week's lettings, which totaled 1003 tons of structural steel, 1683 tons of reinforcing bars and 1440 tons of cast iron pipe.

Outstanding among structural awards was 250 tons to Harnischfeger Sales Corp. for a crane for the city of Los Angeles. Securities Materials Co. booked the only sizable reinforcing bar letting—533 tons for a high school at Venice, Cal. United States Pipe & Foundry Co. was successful bidder on 1051 tons of cast iron pipe at Los Angeles and Pasadena, Cal.

In the Northwest the bid of Puget Sound Machinery Depot was low on the Green River pipe line replacement near Tacoma, Wash. Approximately 4000 tons of plates

The mechanism below is just that. Built right into the Landis Type 30 Roll Grinder it is ever watchful that roll contours will without fail be symmetrically ground.

You may be certain that its principle of design is correct. Landis engineers with their years of experience have seen to this. It is built with precision for precision results. Landis mechanics whose labors have always been for greater precision have seen to this.

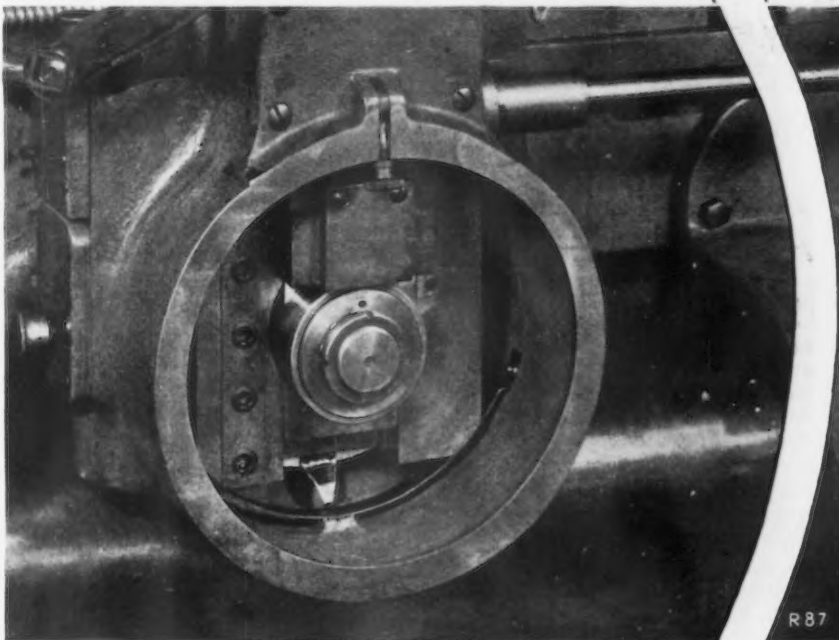
Roll contour symmetry—whether crowning or concaving—is something you are constantly striving for. From the Landis you get it. Should you doubt this statement, ask us for concrete proof.

No. 178

The Source of Roll Contour Symmetry

THE CATALOG

NO. IS H301



R 87

LANDIS TOOL CO.

WAYNESBORO, PA.

are specified under the steel alternate on which an award will probably be placed. A hospital to be constructed at Warm Springs, Mont., will require 200 tons of reinforcing bars and 245 tons of structural steel. Plans for a State bridge in Snohomish County, Wash., include 346 tons of reinforcing bars and 227 tons of structural steel.

Warehouse business on the Coast

is showing favorable seasonal increases. A reduction of 10c. per 100 lb. is reported on floor plates in the San Francisco district. Reinforcing jobbers in the central California area have been restricted mostly to minor lettings, although major tonnages are pending.

Mills are operating at near capacity to care for business under contract.

LANCASTER
Malleable
Iron Castings
 A DEPENDABLE METAL FROM A
 DEPENDABLE SOURCE
Specify
LANCASTER MALLEABLES

LANCASTER MALLEABLES & STEEL CORP.
 LANCASTER, NEW YORK — SUBURB OF BUFFALO

Scrap Prices Higher At Buffalo

BUFFALO, Feb. 5.—The Hanna Furnace Corp. is expected to blow in a second blast furnace on or about March 1. Pig iron business continues steady in volume, with a few lots being placed running to larger tonnage than usual. A Japanese importing firm is seeking 50,000 tons of pig iron, this inquiry going to most of the Eastern producers.

Steel works operations are unchanged from last week, with Bethlehem's Lackawanna plant running ten open-hearths, Republic five, and Wickwire-Spencer Steel Corp. two. The Seneca sheet division of Bethlehem is running at 60 to 70 per cent of capacity. Structural and reinforcing bar awards are practically at a standstill. The Lake Street bridge in Elmira will require about 1000 tons of steel, but this job is in the formative stage.

The scrap market is brisk. Within the past week one of the mills bought a considerable tonnage of No. 1 and No. 2 heavy melting steel, paying \$12.50 and \$11.50 respectively. Another large consumer is expected in the market at any time. Dealers believe that this consumer will not be able to buy No. 1 under \$13. A sale of a sizeable tonnage of short mixed turnings and borings was made to a blast furnace consumer at a price reported to be \$7.50. Machine shop turnings

have been sold outside the city at a frontier point for \$7.50. This makes the Buffalo price about \$6.25. A large Buffalo consumer is reported to be seeking to buy steel scrap in the Albany district.

Sheets and Wire Fairly Active in the South

BIRMINGHAM, Feb. 5.—Activity in the pig iron market is more or less limited, with an irregular volume of business being placed. A few foundries are placing contracts from week to week, but most of those that intend to buy forward iron this month have already placed their contracts. Spot sales are being made daily. Pig iron consumption is expected to increase during February. In January the melt dropped below expectations and was reflected in shipments. Last month some foundries were slow in resuming operations after the holidays, while others were on reduced schedules.

Four blast furnaces are operating, the same number as for the past three weeks. It is likely that one or two additional furnaces will resume production before the end of the month.

New tonnage in sheets and wire products is in fair volume. Demand for plates and structural shapes is sporadic. Additional rail tonnage is being expected from week to week. The Ensley rail mill will

likely start again some time toward the latter part of the month.

Seven open-hearth units were worked last week and the present week is to have the same number.

Export Scrap Growing Scarcer at Boston

BOSTON, Feb. 5.—The market here for No. 1 and No. 2 steel for Pittsburgh delivery is 50c. a ton lower. The drop is purely sentimental, in sympathy with reductions at Pittsburgh, and has no bearing whatever on the export market. Local and Providence exporters find desired grades of scrap growing rather scarce, and are paying full prices for everything offered. Sales of No. 2 steel were made the past week at \$8.50 a ton, delivered local army base, and No. 2 cast was sold at \$7.25 to \$7.50 a ton, these prices being a shade higher than heretofore. The No. 2 cast, 3500 tons, will be loaded here on a steamer that took on about 2500 tons of scrap at Providence, R. I. The past week 3000 tons of scrap left here for Genoa, Italy, via New York, where an additional 2000 tons will be loaded. Local brokers are paying \$7.50 to \$7.75 a ton, f.o.b., for No. 1 steel for Worcester, Mass., delivery, which is slightly better than the Pittsburgh delivery price.

Rice, Barton & Fales, Inc., Worcester, Mass., is inquiring on about 700 tons of malleable iron grades, with possible deliveries this month. Purchase, however, is contingent upon the company obtaining an order for machinery. Pig iron sales, though in small lots, mostly carlots, are generally to foundries that have not been in the market for many months.

Scrap Supply Growing at Detroit

DETROIT, Feb. 5.—The tone of the local scrap market is easier because of the huge amount of scrap now coming out of the automobile industry. All available facilities at the Nicholson Dock, including ore boats, are being utilized to store old material until it can be shipped out by water in the spring. A Cleveland steel company is reported to have an ore boat tied up at Toledo which is being loaded with scrap from automotive plants there. With the supply of scrap growing rapidly, it appears likely that prices in the local market will shortly be forced to give ground.

A. F. of L. Slipping

(CONCLUDED FROM PAGE 48)

federation who otherwise might not designate any affiliation, preferring it to a company union. In any plant in which the federation won a majority and therefore would have the right to speak for all employees, it would be reasonable to expect that the federation would have less trouble than normal in signing up new members who naturally would curry the favor of those who were to be their official spokesmen.

One of the federation's most severe criticisms of the Automobile Labor Board has been the latter's "do nothing" policy. Yet clearly the facts do not support this charge. The Board has been in existence 10 months. For 60 days after its creation it was occupied entirely with the settling of one strike after another—Nash Motors, Motor Products, Fisher Body at Cleveland, Fisher Body at Flint. Then it tackled the problem of handling cases of so-called discrimination and has heard and disposed of more than 1200 cases. Incidentally, only in relatively few cases were the charges of discrimination supported by the facts.

When the Automobile Labor Board had settled strikes, heard discrimination cases and made seniority rulings for layoffs and rehiring of automotive employees (about which there have been few complaints), the slack season in motor car production was at hand. To give the greatest possible number of workers an opportunity to vote conveniently, members of the board decided it best to postpone plant elections until a new production season was at hand and then poll the entire industry when employment was at or near the year's peak. Following out this program, the Board held its first election early in December and by the middle of February will complete the voting in Detroit plants. Immediately thereafter elections will be conducted in other automotive cities, the purpose being to select all bargaining committees in the industry before operations begin to taper off seasonally in the late spring.

Although these newly-elected boards are the official bargaining agencies for employees, their establishment does not prevent the management of any plant from receiving unofficial bargaining committees representing specified groups, such as an A. F. of L. committee which might wish to speak for the members of that organization in that particular plant. That

Schieren • izing -

your answer to the problem of
Economical - Power - Transmission

TO PLANT MEN who recognize the opportunity for profits from reduced power costs, we offer Schieren-izing, the process of manufacture that gives to

Maintenance Cost — factors which keep power losses to the minimum. Write for prices and description of this better belting.

Schieren • Belting

a combination of Unusual Pliability, a Natural Glove-like Pulley-Gripping Surface, and Long Life with Low



SCHIEREN-IZING makes leather belting pliable

is, the management legally must meet with the official bargaining committee, but may also confer with other groups if it so desires, just as it retains the right to meet with any individual employee.

After each bargaining committee is elected, it is called in to the Automobile Labor Board's headquarters and put through a short course in the science of collective bargaining. The Cadillac commit-

tee, the first to be organized, has extended an invitation to all other committees similarly elected to join with it in formation of a Federation of Automobile Industrial Employees. In its scope the projected association would parallel the A. F. of L., which views this move as an attempt to organize a federation of company unions. It is yet too early to judge what is likely to come of this proposal.

METAL BENDINGS

Our new process will enable us to supply accurate bends free from distortion and tool marks.

Special Sections — Mouldings — Tube — Pipe — Conduit — Bar and Structural Steel — Brass — Copper — Aluminum.

Send your prints for quotations.
A great variety of difficult bendings produced at low cost.

Bending data on request.

WALLACE SUPPLIES MFG. CO.

1306 DIVERSEY PARKWAY

CHICAGO, ILLINOIS

Fully Automatic, High Speed Production Sawing Machines

MARVEL

No. 6A No. 9A

DO your sawing *Auto-*
matically—with speed!

These new MARVEL auto-
matics go thru steel up to
four sq. inches per minute.
Cut cutting-time and cutting-
costs to a fraction.

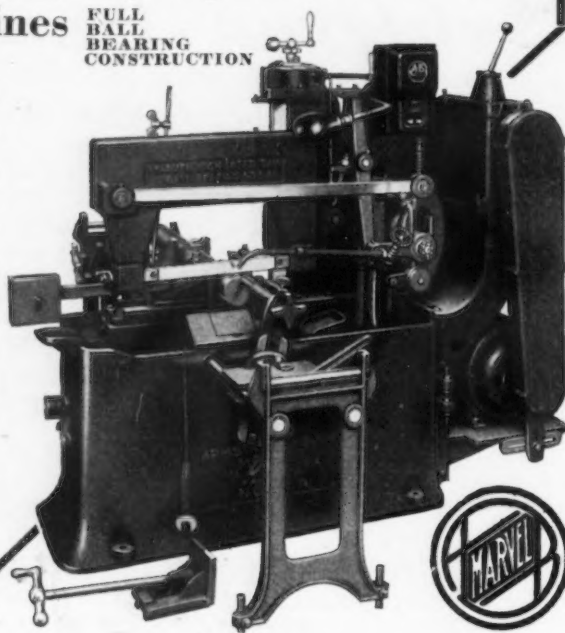
Easily set up, they Feed,
Measure, Cut, Count and
Stop, *automatically*—do the
work of several saws and
men. They are fast, accu-
rate, dependable . . . will
keep well ahead of produc-
tion lines. No. 6A, capacity
to 6" x 6"; No. 9A, ca-
pacity to 10" x 10".

Write for Bulletin No. 600.

**Armstrong-Blum
Mfg. Co.**

"The Hack Saw People"
349 N. Francisco Ave.,
CHICAGO, U. S. A.

FULL
BALL
BEARING
CONSTRUCTION



Fabricated Structural Steel Awards in Fair Volume—New Projects Gain

LETTINGS of 16,600 tons are the largest, with one exception, since the last week in November. The outstanding award is 8000 tons for a section of the West Side express highway in New York. Other bookings include 1650 tons for the New York Central for track depression work in New York between Forty-second and Fifty-third Streets, and 1225 tons for a bridge over the Lafayette River at Norfolk, Va. New projects of 16,150 tons compare with 9400 tons last week and 16,150 tons two weeks ago.

NORTH ATLANTIC STATES

Exeter, R. I., 170 tons, State service building, to Bethlehem Fabricators, Inc.

New York, 1650 tons, New York Central depressed tracks between Forty-second and Fifty-third Streets, to American Bridge Co.

New York, 8000 tons, section of West Side express highway; 4000 tons to Harris Structural Steel Co. and 4000 tons to American Bridge Co.

Sullivan County, Pa., 265 tons, bridge, to McClintic-Marshall Corp.

Baltimore, 145 tons, Pennsylvania Railroad platform shelters, to Baltimore Steel Co.

Pittsburgh, 185 tons, city hospital at Mayview, to Ingalls Iron Works.

SOUTH AND SOUTHWEST

State of Virginia, 340 tons, railroad overpass, to Virginia Bridge & Iron Co., Inc.

Norfolk, Va., 1225 tons, Lafayette River bridge, to American Bridge Co.

Stokes County, N. C., 110 tons, highway bridge, to Bethlehem Fabricators, Inc.

Myrtle Beach, S. C., 635 tons, highway bridge, to American Bridge Co.

Texas County, Okla., 255 tons, highway bridge, to Capital Steel & Iron Co.

Port Arthur, Tex., 120 tons, Gulf Refining Co. buildings, to Petroleum Iron Works.

Carnegie, Okla., 375 tons, bridge, to J. B. Klein Iron & Foundry Co.

CENTRAL STATES

Mount Vernon, Ohio, 1170 tons, factory building for Pittsburgh Plate Glass Co., to McClintic-Marshall Corp.

Franklin, Ohio, 220 tons, highway bridge, to Wheeling Structural Steel Co.

Dearborn, Mich., 140 tons, alterations for installing electric furnace in Ford plant, to R. C. Mahon Co.

Harrison, Ill., 200 tons, bridge, to Midland Structural Steel Co.

Kenosha County, Wis., 175 tons, bridge, to McClintic-Marshall Corp.

Milwaukee, 100 tons, Government light houses, to Lakeside Bridge & Steel Co.

Topeka, Kan., 350 tons, bridge, to Missouri Valley Bridge & Iron Co.

WESTERN STATES

Washington and Yuma Counties, Colo., 147 tons, State bridge and overhead crossing, to an unnamed bidder.

Minkler, Cal., 150 tons, bridge, to Minneapolis-Moline Power Implement Co.

Los Angeles, 110 tons, addition for Pacific Coast Borax Co., to Consolidated Steel Corp.

Los Angeles, 125 tons, warehouse for Earle M. Jorgensen Co., to Pacific Coast Steel Corp.

Los Angeles, 250 tons, crane for city, to Harnischfeger Sales Corp.

Van Nuys, Cal., 100 tons, radio towers for Western Broadcasting Co., to Pacific Coast Steel Corp.

Portland, Ore., 115 tons, bridge over Bonneville navigation canal, to Poole & McGonigle.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

Andover, Mass., 250 tons, school.

Hartford, Conn., 300 tons, building for Mount St. Joseph College.

New York, 750 tons, public school building No. 148 at Jackson Heights.

Elmira, N. Y., 1000 tons, Lake Street bridge.

Sykesville, Md., unnamed tonnage, dormitory for State hospital; low bidder Davis Construction Co.

Clarks Summit, Pa., unnamed tonnage, post office; Breig Brothers, Scranton, Pa., low bidder.

Washington, 9000 tons, addition to Congressional Library; bids March 1.

THE SOUTH

Knoxville, Tenn., 1000 tons, permanent piling, Pickwick Landing dam; bids opened Feb. 4, Tennessee Valley Authority.

Knoxville, Tenn., 5000 tons, estimated, temporary piling, coffer dam for Pickwick Landing lock; specifications this month.

Wilmington, N. C., 300 tons, piling, lock and dam No. 2, Jones Landing, Cape Fear River, N. C.; bids Feb. 12.

State of Georgia, 525 tons, five highway bridges.

Beaufort, S. C., 150 tons, bridge for United States Engineer Corps.

Franklinton, La., 650 tons, bridge.

San Antonio, Tex., 250 tons, stadium.

CENTRAL STATES

Detroit, tonnage being estimated, post office.

Cleveland, 330 tons, blower building for Easterly sewage disposal plant; bids Feb. 21.

Minneapolis, 1200 tons, armory.

Elkhart, Kan., 225 tons, bridge.

WESTERN STATES

Warm Springs, Mont., 245 tons, hospital; \$400,000 has been allotted by P.W.A.

Billings, Mont., 158 tons, senior high school; bids Feb. 14.

Government Island, Cal., 2850 tons sheet piling, bulkhead for United States Coast Guard Service, general contract awarded to Ben C. Gerwick, Inc., steel award being withheld pending further appropriations by Congress.

Mare Island, Cal., 800 tons, gantry crane for Navy Yard, Specification 7855; bids to be taken in Washington on Feb. 13.

Long Beach, Cal., 230 tons, Lowell junior high school addition; bids under advisement.

Snohomish County, Wash., 227 tons, State bridge over Ebey Slough; bids Feb. 19.

FABRICATED PLATE

AWARDS

Brooklyn, N. Y., 290 tons, six tanks for Standard Oil Co. of New Jersey to J. K. Wheeling Co.

Pittsburgh, 700 tons, rebuilding fleet of Carnegie Steel Co. coal barges, to American Bridge Co.

Port Arthur, Tex., 205 tons, pressure tanks for Gulf Refining Co., to Petroleum Iron Works.

Catlettsburg, Ky., 175 tons, asphalt tanks for Ashland Refining Co., to Chicago Bridge & Iron Works.

Wisconsin Rapids, Wis., 110 tons, boiler shell, to Manitowoc Boiler Co.

NEW PROJECTS

Pelham Parkway, N. Y., 1300 tons, for 48-in. fabricated pipe; bids to Westchester Park Commission.

Belmont County, Cal., Water District will take bids Feb. 12 on two tanks of 65,000-gal. and 650,000-gal. capacity respectively. George A. Kneese, Stafford Building, Redwood City, Cal., is engineer.

Railroad Equipment

Merchants Despatch may enter the market for about 200 refrigerator cars.

Chicago, Burlington & Quincy is considering the purchase of about 8000 tons of track accessories.

Niacet Chemicals Corp. has ordered three tank cars from American Car & Foundry Co.

Liquid Carbonic Corp. has ordered five steel-sheathed 40-ton box cars from American Car & Foundry Co.

Chesapeake & Ohio has ordered five 50-ton hopper cars from Bethlehem Steel Co.

Louisville & Nashville has placed orders with the Pullman Co. for air-conditioning 25 sleeping parlor cars and with the Safety Car Heating & Lighting Co. for air-conditioning five dining cars.

Norfolk & Western will spend about \$80,000 for air-conditioning with electro-mechanical system and remodeling eight of its standard passenger coaches. Work will be carried out in the railroad's Roanoke shops.

St. Louis-San Francisco has been authorized by the court to equip 2000 freight cars with Grip Nut brake beam supports, and 500 steel hopper cars with one-wear rolled steel wheels, apply six side doors to 75 coal cars, equip 25 freight cars with A B brakes, 150 coal cars with steel sides and floor supports, and 600 box cars with Youngstown steel sides and Youngstown corrugated steel doors. Air-conditioning of three business cars also has been authorized.

RAILS

Wheeling & Lake Erie has placed 2200 tons of rails with Carnegie Steel Co.

Southern Pacific has distributed orders for 26,174 tons of rails as follows: 7615 tons to Colorado Fuel & Iron Co.; 12,559 tons to Columbia Steel Co.; 6000 tons to Pacific Coast Steel Corp.

Burlington has ordered 16,000 tons of rails, of which 7700 tons went to Illinois Steel Co., 4300 tons to Inland Steel Co. and 4000 tons to Colorado Fuel & Iron Co.

St. Louis-San Francisco, which will begin in March to receive deliveries of 13,000 tons of 112-lb. rails which it ordered recently from Tennessee Coal, Iron & Railroad Co., has been authorized by the court to purchase the necessary tie plates and other accessories. The road also has been authorized to buy an additional 1,000,000 tie plates for other tracks. The 90-lb. rail, which is to be replaced, will be reconditioned in the company's shops at Springfield, Mo., and relayed in sidings, etc.

Reinforcing Steel

Awards 3850 Tons—New Projects
6950 Tons

State of New Jersey, 800 tons, highways and bridges, to Igou Brothers through P. W. Burns, general contractor.

Brooklyn, 100 tons, sewer, to Igou Brothers.

Des Moines, Iowa, 185 tons, post office, to an unnamed bidder.

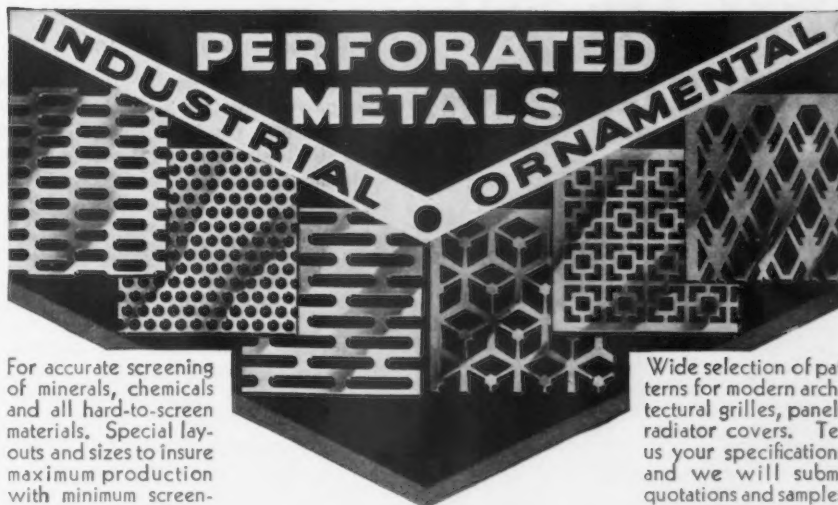
St. Louis, 400 tons, Page Avenue viaduct, to Kalman Steel Corp.

State of Georgia, 780 tons, prison buildings in Tatanall County, to Kalman Steel Corp.

Pinal County, Ariz., 127 tons, two State highway structures, to Allison Steel Mfg. Co.

Santa Ana, Cal., 139 tons, City Hall, to Truscon Steel Co.

Altadena, Cal., 100 tons, school alterations, to Hammond Lumber Co.



For accurate screening of minerals, chemicals and all hard-to-screen materials. Special layouts and sizes to insure maximum production with minimum screening costs.

Wide selection of patterns for modern architectural grilles, panels, radiator covers. Tell us your specifications, and we will submit quotations and samples.

ANY METAL ANY PERFORATION

The
Harrington & King
PERFORATING Co.

5657 FILLMORE STREET

CHICAGO, ILLINOIS

Long Beach, Cal., 200 tons, school reconstruction, to an unnamed bidder.

Venice, Cal., 533 tons, high school, to Security Materials Co.

San Francisco, 165 tons, Visitation Valley school, to W. C. Hauck & Co.

State of California, 183 tons, highway work in nine counties, to unnamed bidders.

State of Colorado, 100 tons, highway work in three counties, to unnamed bidders.

NEW REINFORCING BAR PROJECTS

Cheshire, Mass., 100 tons, State road.

Bayonne, N. J., 200 tons, school building.

Staten Island, N. Y., 100 tons, grade separation at Fort Wadsworth.

Carlisle, Pa., 230 tons, barracks; bids in.

Cleveland, 330 tons, blower building for Easterly sewage disposal plant; bids Feb. 21.

State of Illinois, 700 tons, highway projects; bids to be opened Feb. 8.

Chicago, 500 tons, Fleischmann Malting Co.

Chicago, tonnage being estimated, Mills Novelty Co.

Chicago, tonnage being estimated, building for the Ovaltine Co.

Denver, 3580 tons, enlarging and lining Moffatt tunnel; Utah-Bechtel-Morrison, Inc., Ogden, Utah, general contractor.

State of California, 206 tons, highway work in four counties; bids Feb. 14.

San Fernando, Cal., 106 tons, lemon packing plant, bids under advisement.

Santa Ana, Cal., 321 tons, block "A" high school addition; general contract awarded.

Los Angeles, 102 tons, reconstruct addition to David Starr Jordan school.

Newport Beach, Cal., 152 tons, elementary school; bids under advisement.

Warm Springs, Mont., 200 tons, hospital, \$400,000 allotted by PWA; bids soon.

Snohomish County, Wash., 346 tons, State bridge over Ebey Slough; bids Feb. 19.

Welders to Meet

DESIGN and construction of the welded penstocks for Boulder Dam will be described by S. C. Hollister, director, school of engineering, Cornell University, at a joint meeting of the New York section of the American Welding Society and the power division of the American Society of Mechanical Engineers. The meeting will be held Feb. 14, 7.30 p.m., at the Engineering Society's Building, New York.

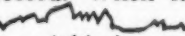
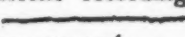
The Aluminum Co. of America, Pittsburgh, and the Timken Roller Bearing Co., Canton, Ohio, have been licensed by the Tube Reducing Corp., 242 Madison Avenue, New York, to manufacture tubing by the latter company's patented process.

The Westinghouse Electric & Mfg. Co. has been awarded contract by the Carnegie Steel Co. for part of the electrical equipment to be installed at the latter concern's McDonald mills near Youngstown. Large d.c. motors, totaling 16,000 hp., motor generator sets and control equipment comprise the bulk of the order. Delivery of the electrical equipment, which will be built in the Westinghouse East Pittsburgh works, is scheduled to be made within the next few months.

WHY THE SELF-STABILIZED ARC



— MEANS BETTER WELDING AT LOWER COST

You get the facts about welder efficiency when you look at the oscillograph record. When it looks like this  it shows you a variable intensity of heat. And that shows up in the etched or X-rayed weld with variations in penetration . . . in fusion . . . in density. When the current recording looks like this  you get uniform strength.

Write for your copy of the 24-page Bulletin, "Weld It Well".

HARNISCHFEGGER CORPORATION
4401 W. National Ave., Milwaukee, Wis.

**P&H HANSEN
& ARC WELDERS**

PERSONALS

[CONCLUDED FROM PAGE 49]

Wales, and on leaving school was employed by the British Mannesman Tube Co. In 1907 he came to this country and became associated with the Seamless Tubes Co. of America, now the Pittsburgh Steel Products Co., where he served as superintendent in various departments for 18 years. He left to become identified with the Jones & Laughlin Steel Co., where he helped build the seamless tube mills at Aliquippa, Pa. Early in 1929, Mr. Jones joined the Youngstown Sheet & Tube Co. as assistant superintendent in charge of the finishing department. HARRY FORD, who has been serving as general hot mill foreman at the seamless tube works since 1931, succeeds Mr. Jones as assistant superintendent.

♦ ♦ ♦

ARTHUR CARTEN, who was purchasing agent for the Commonwealth Steel Co., and its successor, the General Steel Castings Co., Granite City, Ill., for 25 years, has been appointed purchasing agent for St. Louis County.

♦ ♦ ♦

J. J. MULLEN, vice-president of the Moloney Electric Co., manufacturer of transformers, St. Louis, has been elected president, to succeed T. O. MOLONEY, who has been made chairman of the board.

♦ ♦ ♦

DAVID BAKER, JR., metallurgical engineer, Philadelphia, is scheduled to sail for Australia on Feb. 6 in the interests of the Broken Hill Proprietary Co., Ltd., New South Wales.

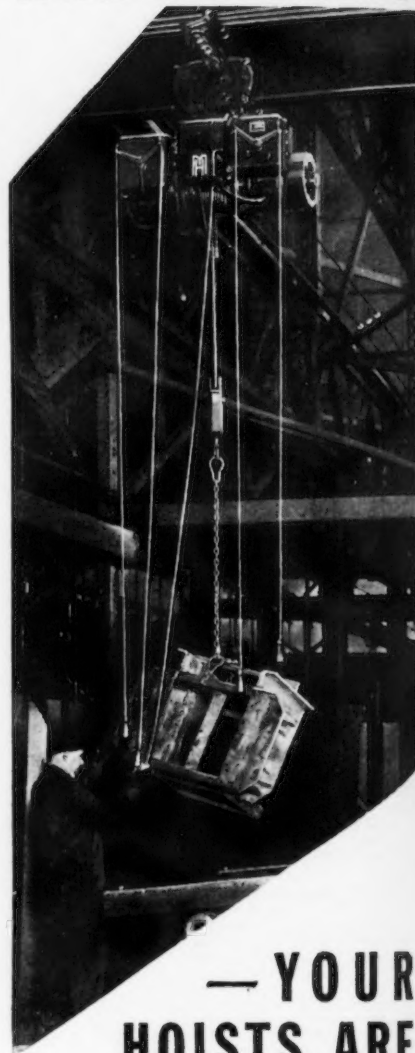
♦ ♦ ♦

WALTER G. BLUME, who has been associated with the Superior Steel Corp., Pittsburgh, for the past 17 years, has been appointed assistant manager of sales. WILLIAM M. COWLES has been appointed eastern manager of sales, and will assume charge of the Philadelphia office, formerly under the supervision of the late John E. Wetzel.

♦ ♦ ♦

E. B. ABBETT, since 1927 general manager of the Newport Culvert Co., Newport, Ky., has been re-elected president of Gohi Culvert Manufacturers, Inc., Cincinnati. He is serving his sixth term as president of the Gohi Culvert organization and his second term as president of the National Corrugated Rolled Metal Culvert Pipe Association.

WHEREVER HEAVY PIECES ARE HANDLED



— YOUR HOISTS ARE MONEY SAVERS

In addition to offering helpful suggestions on all types of arc welding, P&H Engineers are in position to assist you in selecting the right kind of material handling apparatus to complete your weldery set-up. P&H Hoists and Position Finders are invariably found in service where over-all welding costs are the lowest. Ask for catalogs RH-2 and M-1.

HARNISCHFEGGER CORPORATION
4401 W. National Ave., Milwaukee, Wis.

**P&H MILWAUKEE
& ELECTRIC HOISTS**

Pipe Lines

Wisconsin Rapids Gas Co., Wisconsin Rapids, Wis., plans steel pipe lines for gas distribution at Nekoosa, Wis., where franchise has been granted. Work will begin early in spring.

Stanford University, Palo Alto, Cal., A. L. Trowbridge, civil engineer and assistant comptroller, is considering steel pipe line from new reservoir for water supply for institution to point on Junipero Serra Boulevard on campus, where main distributing station will be located. Project includes dam across San Francisquito Creek, near Searsville Lake. Cost about \$400,000. Fred C. Hermann, Merchants Exchange Building, San Francisco, is consulting engineer.

Niagara Falls, N. Y., plans about 3400 ft. of 66-in. for main water trunk line to Canadian Channel of Niagara River. Fund of \$355,000 is being arranged. H. W. Clark is city engineer.

Stanolind Pipe Line Co., operated by Stanolind Oil & Gas Co., Tulsa, Okla., plans 10-in. line from pumping station at Haven, Kan., to pumping plant near El Dorado, Kan., for crude oil.

Canton, Miss., let contract to Mississippi Foundry & Machine Co., Jackson, Miss., for 112,000 ft. of 6-in. and quantity of larger section for municipal gas transmission lines at \$65,564.

Ridgefield, Wash., will soon take bids on 17,000 ft. of 4, 6 and 8-in., with alternate bids on cast-iron pipe, for water system. Charles Deako, Vancouver, Wash., is consulting engineer. Financing has been arranged.

Groveland, Cal., will take bids within 90 days on 567 tons of 6-in. steel pipe.

Iowa Hill, Cal., will take bids in April on 100 tons of 14-in. steel pipe.

Victor, Idaho, has been allotted \$20,000 by the PWA for waterworks project, including 170 tons of 4 and 6-in. steel pipe. C. R. Black, Idaho Falls, Idaho, is engineer.

Pittsburgh Glass Strike Settled

PITTSBURGH, Feb. 5.—The strike in the plants of the Pittsburgh Plate Glass Co. has been settled. Workers were granted a 5 per cent increase in wages and a contract which expires next fall. The contract may be opened by either side on 30 days' notice or may be renewed indefinitely. Operations have already been resumed and by tonight both Pittsburgh district plants will be in full swing.

Cast Iron Pipe

Groveport, Ohio, plans water pipe lines; also elevated steel tank and tower and other waterworks installation. Fund of \$57,000 has been secured through Federal aid. Jennings & Lawrence, 12 North Third Street, Columbus, Ohio, are consulting engineers.

Seabee, Ky., asks bids until Feb. 15 for pipe lines and other equipment for water supply. Cost about \$53,000. Finch & Babcock, Indianapolis, are consulting engineers.

Broken Bow, Neb., closes bids Feb. 18 for 13,500 ft. of 4 to 10-in. for water supply; also for pumping equipment and other waterworks installation. Cost about \$35,000. F. A. Raasch is superintendent of water department.

Saugus, N. Y., closes bids Feb. 12 for 16,000 ft. of 6-in. for water system; also for 200,000-gal. steel standpipe. Cost about \$48,000. W. T. Field Engineers, Inc., Watertown, N. Y., is consulting engineer.

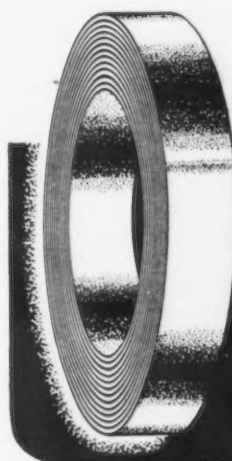
Fabrication operations

DO NOT DAMAGE THIS COATING



The fine quality of non-ferrous metal coatings—zinc, copper and cadmium—as electrically applied to cold rolled strip by the specialized Thomas method, has lead to the use of Thomastrip in a wide range of applications... The purity, density, uniformity and smooth surface of Thomas coating—its crack-proof and peel-proof quality under deep drawing and severe forming operations—plus the workability, gauge and temper uniformity of Thomas cold rolled strip, has made Thomastrip a preferred specification of product engineers... A Thomas representative will gladly cooperate with you in the application of Thomastrip to your production.

Test Thomastrip for your product. Send for test samples. Specify gauge, width, temper and coat desired.



THE THOMAS STEEL CO. • WARREN, O.
SPECIALIZED PRODUCERS OF COLD ROLLED STRIP STEEL

THOMASTRIP

STRIP  STEEL

BRIGHT FINISH • ZINC COATED
COPPER COATED • CADMIUM COATED

Ripley, Miss., plans water pipe line system. Special election has been called for Feb. 19 to approve bonds for \$52,000 for project.

Mabton, Wash., will soon ask bids for about five miles of 4 to 8-in. for water system; also for other waterworks equipment. Fund of \$42,000 has been secured through Federal aid. G. D. Hall, 901 Nineteenth Street South, Yakima, Wash., is consulting engineer.

Adams, Wis., has low bid from James B. Clow & Sons for 150 tons of 6 and 8-in. for new waterworks system.

Flushing, Ohio, plans water pipe lines and other waterworks installation. Fund of \$60,000 has been arranged. R. F. McDowell, Chester-Ninth Street Building, Cleveland, is consulting engineer.

Framingham, Mass., plans water pipe line extensions and replacements. Fund of \$300,000 is being arranged for this and other municipal improvements.

Scottsboro, Ala., asks bids until Feb. 11 for water pipe line system.

Marysville, Wash., plans water pipe lines and other waterworks construction. Fund of \$57,000 has been secured through Federal aid.

Ottawa, Ont., plans new double 48-in. line from pumping station on Lemieux Island to city for water trunk line. Cost over \$65,000. W. E. MacDonald, City Hall, is city engineer.

Los Angeles Department of Water & Power, Los Angeles, has awarded 300 tons to National Cast Iron Pipe Co. and 450 tons to United States Pipe & Foundry Co.

Pasadena, Cal., has placed a contract for 600 tons of 6 and 8-in. with United States Pipe & Foundry Co.

South Pasadena, Cal., will open bids Feb. 6 on 188 tons of 6 to 10-in.

Ridgefield, Wash., will take bids soon on 189 tons of 4 to 8-in. with alternates on steel. PWA funds have been allotted.

Belmont, Cal., will open bids Feb. 12 on 325 tons of 4 to 8-in.

Santa Barbara, Cal., will open bids Feb. 7 on 130 tons of 4 to 12-in.

A New DAVIS KEYSEATER Tilting Table Type



The outstanding feature of this new machine is the tilting table which may be set at any angle required for cutting straight or tapered keyways in bores tapering up to 3" per foot.

The cutter remains vertical at all stages of the operation, making it easy to set up the work.

The table is hand fed by a lever at the front, an adjustable stop being provided to limit the depth of cut.

The same broach type cutters are used as in the older machines of fixed table type.

Built in three sizes to cut keyways from 1/16" to 1 1/2" in width. Send for circular giving complete details.

DAVIS KEYSEATER COMPANY
400 Exchange Street ROCHESTER, NEW YORK

pared with 466,933 in November, and with 610,365 in December, 1933. Production in December, 1934, was 422,985 units, against 467,699 in November, and 610,440 in December of the preceding year.

Total 1934 barrel shipments included 6,682,400 units, according to reports to the Bureau of the Census from 31 manufacturers. This compares with shipments of 6,560,258 units in 1933. Production in 1934 was 6,677,322 units, against 6,571,581 in the preceding year.

Unemployment Lower During December

THE total number of unemployed workers in December, 1934, was 9,602,000, according to an estimate by the National Industrial Conference Board. This is a decline of 463,000 or 4.6 per cent from the preceding month and a drop of 733,000 or 7.1 per cent from December, 1933.

Valley Output Rises

(CONCLUDED FROM PAGE 59)

getting most of their support from the automobile industry. A considerable tonnage of wire, however, is going into trays for refrigerators and stoves. On the other hand, the call for wire for beer cases and milk bottle trays has fallen off.

Makers of special alloy steels hope to book orders from France and other European countries that are building refineries to handle the oil which is now being piped from the Irak fields to Mediterranean ports. Germany is the only country outside of the United States which can produce certain highly-specialized steels for cracking stills and other refinery equipment, and a number of countries, notably France, will probably prefer to buy from our mills. Refineries, of course, constitute an important arm of national defense.

Hopes of a lasting revival of railroad demand rest on an increase in freight traffic. Unfortunately the carriers have not benefited as much from the bulge in automobile production as had been hoped. Notwithstanding code efforts to encourage the movement of steel by rail, a large proportion of the material now moving to automobile centers is being transported by truck. Similarly a considerable part of the movement of finished cars out of assembly plants is being handled by truck.

OBITUARY

PAUL WILLIS, vice-president of the McClintic-Marshall Co. from 1924 until his retirement in 1931, died Jan. 30 at the age of 71 years, at Chicago. He was born in East Orange, N. J., and began his career as an engineer in Jersey City in 1885. He went to Chicago in 1890, where he and F. W. Barker organized the Kenwood Bridge Co. Mr. Willis was secretary and engineer of the bridge concern until 1908 and president from 1910 until the company was absorbed in 1925 by the McClintic-Marshall Co., subsidiary of the Bethlehem Steel Co. He erected the steel work for the Electrical Building at the World's Fair held in Chicago in 1893.

♦ ♦ ♦

LOUIS G. BEERS, formerly sales manager of the New Jersey Wire Cloth Co. prior to its merging with the John A. Roebling's Sons Co., Trenton, N. J., died of a heart attack at his home on Jan. 31, aged 72 years. He had been with the company 28 years, until his retirement in 1928. He had been identified with the woven wire fabrics industry for his entire business life.

♦ ♦ ♦

LOUIS C. CASSINELLI, president of the Midwest Supply Co., and Cincinnati representative of the

Peerless Machinery Co., died Jan. 31 at his home in Cincinnati. He was 65 years old.

Fabricated Shape Orders Lower— Plates Rise

ALTHOUGH shipments of 69,911 tons of fabricated structural steel in December were 32 per cent above December, 1933, bookings of 50,770 tons during the month recorded a decline of 36 per cent from the same month last year, according to reports received by the American Institute of Steel Construction from 81 per cent of the industry. Shipments were in a volume comparable to the average monthly shipments the first half of the year, whereas the bookings were 25 per cent less.

Orders for fabricated steel plate booked in December aggregated 26,025 tons, the highest since last June when bookings were 27,395 tons, according to the Bureau of the Census. The December total reflected a gain of 9396 tons over November, and consisted chiefly of miscellaneous requirements.

For the year 1934 plate orders totaled 241,992 tons compared with 199,031 tons in 1933.

December shipments of steel barrels totaled 424,233 units, com-

Blanket Short Week Panacea Won't Cure Our Labor Ills

(CONTINUED FROM PAGE 21)

is entirely safe to say that this degree of comfort, plus the large amount of work which is provided by the service industry occupations, are features which are inseparable from the American phase of life.

Economic Unbalance

It is, of course, extremely unfortunate that we should occasionally encounter periods of economic unbalance, and that these times, perhaps, are more severe than the proportionate experience of other countries engenders a good deal of what might be termed the pains of readjustment. However, just as the healthiest child often has to endure the most intense growing pains, so it logically follows that the domestic economy of the United States will also suffer the growing pains of economic expansion and adjustment. The unbalance which we are experiencing today is due primarily to the timidity of the normal sources of financial stimulation brought about by the hysterical growth and wildly speculative periods of 1928 and 1929. This lack of financial stimulus arrests the normally expected growth in our manufacturing industries, and this, coupled with the loss of our foreign trade, has produced a cumulative burden of unemployment and financial doubt which, in turn, has been reflected in a shrinkage in our power to buy the services normally available to us in the service industries.

Administrative Attempts to Make Adjustments

Everyone is aware of the attempts made during the past two years by the Administration to restore the sense of balance in our domestic economy. However, but few people realize that if every available asset in the hands of the Government were turned into cash and our national securities pawned in the highest market, the resulting sum of money would yet still be relatively a drop in the bucket compared with the billions of dollars of turnover which represent the normal processes of buying, selling, and manufacturing which go to make up our workaday year. The PWA, FERA, and similar agencies can at best but be stop-gap palliatives, and no one is more acutely aware of this than the administrators of these schemes and

**Wire Formed
to Your Specifications**

6 7/32"

E.H. Fitchener & Co.
200-206 WALNUT ST. BINGHAMTON, N.Y.

WIRE STAPLES **ALL SIZES**

their sponsors. However, a look back through the length, breadth, and depth of the economic emergency through which we have been passing gives one a mental sensation similar to that of the man who looks over the edge of an unguarded precipice and then attempts to walk away—if this same man says that his knees are not shaky, he is probably not being altogether truthful.

A Recommended Policy

A leading characteristic of all national economies is the state of competition existing between industries groups of manufacturers, individual manufacturers, and individuals. Another characteristic of equal importance is the fact that the competitive abilities of all entities vary with the individual situation of each one. Such being the case, therefore, it is as logical to prescribe a high common minimum wage and a low common manufacturing hour for all groups as it would be for a family practitioner making his rounds to prescribe castor oil for every patient he sees in the course of a day.

Although slow-moving, the financial element in what might be termed the competitive ability of groups is automatically taken care of by the ability or inability of any particular group to make a profit. It takes only a few years of profitless operation to bring on extinction.

The labor cost element, however, in the various groups is infinitely less flexible and as a commodity, which it undoubtedly is, from the manufacturer's viewpoint, labor is infinitely less responsive to the demands and exigencies of the economic situation than any other element in the makeup of the cost schedule. There is but one qualification to the above statement, and that is that while rates and hours may be rigidly fixed, the total quantity of hours used being dependent upon financial ability of the group to make a profit is also made to vary by economic pressure, with the result that in a depression such as that through which we have been passing, labor suffers disproportionately more heavily than any other single element, and this, without doubt, is due to the element of rigidity as regards the price and weekly total hour provisions as dictated by trade unions, trade practices, and codes. While it is conceded without reservation that the protection of labor interests calls for the setting up of a basic week, it is, however, equally desirable in the best interests of labor that the basic week be that most suited to the needs of each particular group, these needs being measured in terms of competitive ability of that particular group. Some industries which are in an extremely strongly competitive position could, perhaps, get by with, say, a 20-hour week; others where the stress of foreign competition,

ARMSTRONG

TRADE MARK REG. IN U.S. PAT. OFFICE



Drop-Forged WRENCHES

From the 1-ounce miniature wrenches to the great 60 pounders ARMSTRONG WRENCHES maintain the same dependable qualities: A Stronger Steel, Improved Designs, Accurately Milled Openings. Balance—the "feel" of a fine tool. Careful Heat Treatment. Uniform Finish—black baked enamel with heads ground bright and plainly marked for size.

With 37 types, all sizes; with "U. S. Standard," "Whitworth" and "Metric" openings as well as blanks for special millings always in stock. There's an ARMSTRONG WRENCH for every need. Standardize on these better wrenches. They will cut your wrench costs.

Write for Wrench Catalog
ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"

309 N. Francisco Ave. CHICAGO, U.S.A.
New York Sales Office: 109 Lafayette Street

and particularly where the stress of internal competition is strong, will require a 50-hour week to enable them to survive in the struggle for economically profitable existence. Hence, it does not seem unreasonable to propose, that just as hourly wage rates vary from industrial group to group, so the hours which constitute the basic week for that group should vary, and as a starting point the following series is proposed:

20 Hours)	
25 ")	Overtime at extra
30 ")	rates for all hours in
35 ")	excess of the agreed
40 ")	basic week for each
45 ")	particular industry.
50 ")	

The employment provisions in codes should be so designed that they will permit this recommended degree of flexibility, legally and by mutually satisfactory agreement between management and labor representatives.

Basically, both parties to the proposed agreement know the desirability of this procedure brought about by the competitive situation existing between various industrial groups. Management has witnessed within the last 20 years the sweeping away of whole industries, and labor likewise has seen new occupations spring up and old ones obliterated almost over night. The coming of the steel factory building and the steel house prove a source of anxiety to the carpenter;

the growth of spray painting by power has displaced many thousands of brush artists; the use of die casting and welded steel structures on a large scale has transferred the man-hours of work from the foundry to the metal-working shop, and so on right throughout the industrial fabric we have change and endless change. For any sanely philosophic individual to imagine that we can set up a rigid rule like a 40-hour week or a 30-hour week to control the economics of a situation which is so responsive to technological progress, is absurd, hence it would seem that the scheme proposed merits consideration.

New Direct-Current Transmission System

A NEW system for the transmission and distribution of electric power, making it possible for the first time to interconnect, with static apparatus, non-synchronous systems, has been developed. This has been done by the utilization of electronic devices, including Thyatron and Phanotron tubes. With the new system a higher order of stability is said to have been obtained as contrasted with previous practice, and faults similar to short circuits result in a reduced instead

of an increased power flow on the circuit involved.

The new system, constant-current, direct-current transmission, was described in a paper by Dr. C. H. Willis, Princeton University, and B. D. Bedford and Dr. F. R. Elder, General Electric Co., at the winter convention of the American Institute of Electrical Engineers, held in New York this week.

Direct-current power transmission by constant current is in itself not new, but the work described represents the first time that such transmission has been accomplished commercially, even in test, by means of electronic tubes. Essential features include: Power flow is in one direction only at the will of the operator; but the power can be transmitted in either direction if desired. Amount of power flow is under the control of the operator at all times. No wattless power is transmitted. A short circuit on any circuit of this type results in a reduction of power flow on the circuit involved. Power can be transmitted by either overhead or underground lines any distance desired.

Also, a circuit of this type can be tapped at any point to furnish power or to take power. The nature of the circuit is such that systems of like or unlike frequencies can be operated together to feed any other system of like or unlike frequencies. Overhead systems of this type should be more reliable and less disturbance will be caused by lightning. The system cannot become out of phase or out of synchronism with the system feeding it or with the system receiving power.

To Continue Bridge Design Competition

AS a continuation of its program of encouraging improvement in the aesthetics of steel bridge design, the American Institute of Steel Construction has announced its seventh annual bridge design competition, open to bona fide registered students of structural engineering and architecture in recognized technical schools of the United States, and offers two cash prizes of \$100 and \$50 respectively for the designs placed first and second. Certificates, signed by the Jury of Award and the officers of the Institute, will be awarded to those whose designs are given honorable mention.

The subject of the competitive design is a steel grade crossing elimination bridge.

Late Returns from Laboratory and Mill

(CONCLUDED FROM PAGE 25)

The electrical variations may be studied visually or recorded by a stylus. In either case the recording equipment is separate from the tool holder; therefore the machining operation can be watched without hindrance.

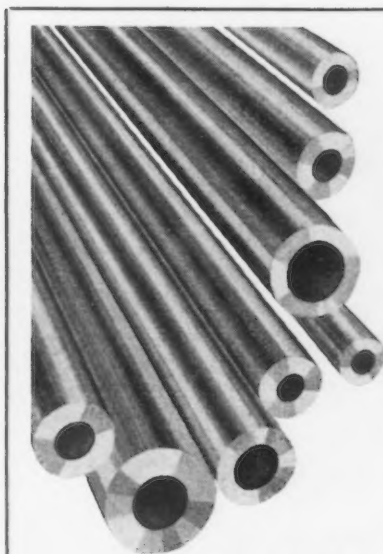
This holder may also be employed for overload protection. If it is adjusted to the maximum or intended cutting performance of the machine, any pressure exceeding this value can, through suitable electrical devices, stop the machine, stop the feeding action or light a warning lamp to notify the operator.

Alan Wood Presents 70.90 Steel

THERE is a lucrative market available to low-alloy steels for railroad car, automobile, and truck construction. Such steels must be cheap, corrosion resistant, easily fabricated, etc. To tap this market, several alloy steels fitting these requirements have recently been marketed. The Corporation led off with the Cor-Ten, Man-Ten group, Republic followed with its RDS alloy, Bethlehem is presenting the new-old Mayari steel, and Alan Wood Steel Co. has just released its 70-90 steel (70,000 lb. per sq. in. minimum yield point, 90,000 lb. per sq. in. minimum tensile strength).

Alan Wood claims its new product is lower priced than for most commercial high-strength corrosion retarding steel. The composition of this steel is not made public but probably includes small percentages of elements which are known to impart strength and corrosion resistance. This corrosion resistance is four times that of structural steels in industrial atmospheres.

Seventy-ninety steel is furnished only in the hot-rolled, pickled finish for both sheets and plates. It machines, drills, and punches readily, and such operations do not affect the physical properties of adjacent metal. Dense welds are readily produced without increasing the hardness or brittleness of nearby areas. Test welds can be bent 180 deg. without failure and, if electricity is used for welding, the current consumption is less



TOOL STEEL TUBING

NON-SHRINK
OIL HARDENING
NON-DEFORMING

for RING DIES
CUTTING DIES
SPACERS, BUSHINGS, Etc.

THE BISSETT STEEL COMPANY

945 E. 67th ST., CLEVELAND, OHIO

Cincinnati

Chicago

Philadelphia

than that required by ordinary structural steels.

After bending, riveting, etc., there is no change in corrosion rate in the deformed sections. But serious grain distortion naturally results in increased corrosion. Because of its excellent ductility as related to strength, the 70-90 steel is adapted to ordinary brake forming. Greater "spring back" is experienced, but the total power required is not excessive where a reduction in thickness commensurate with increased strength is intended.

Troostite or Pearlite?

AN eminent metallographer is Francis F. Lucas, of the Bell Telephone Laboratories, Inc.

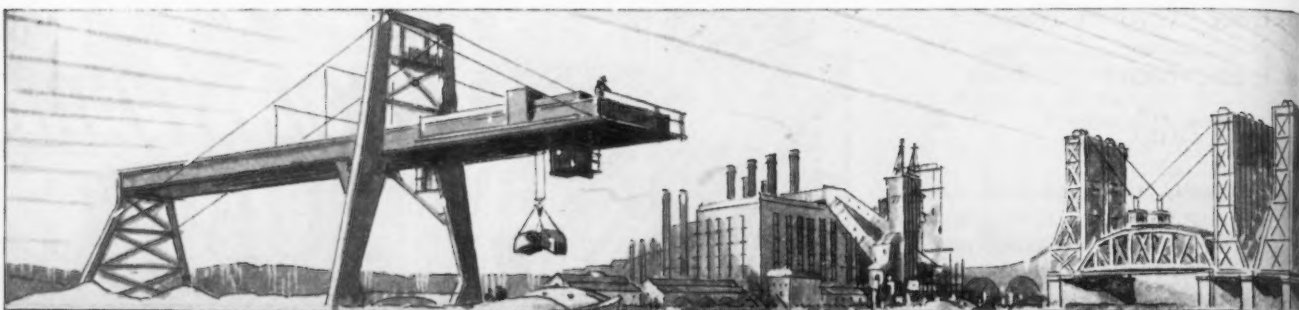
A fine example of his art is shown in Fig. 4. Taken at 4000 diameters with the highest order of resolution, this view shows fine pearlite in the very incipient stages of stratification. The black carbide lines 0.000004 in. across are set in a white ferrite matrix.

This structure, shown to be pearlite at high magnification, was apparently troostite at low magnification. That is, an ordinary hot-rolled slightly hypoeutectoid steel viewed at 200 diameters presents a troostite structure familiar to most metallurgists. This same structure photographed at 1000 diameters with a higher order of resolution shows certain grains fully resolved to lamellar pearlite and other portions of the field are

white and structureless. The micro-photo in Fig. 4 is a view at 4000 diameters of white area which is apparently structureless at 200 diameters; at the higher magnification this area is shown to have a structure in incipient stages of stratification. A complete article on this phase of metallography, with a full set of pictures portraying the various stages of pearlite formation, will appear in the February issue of *Metal Progress*.

Embrittling of Cast Steel by Acid

MANY investigators have studied the effects of pickling on cold-rolled steel. Similar experiments on cast steel at the Naval Research Laboratory have shown that pickling with an inhibitor considerably elevates the Charpy impact values of cast steel. Tests on mechanically strained test bars showed that pickling has little effect on tensile values. However, changes were found in the yield point, elongation, and reduction of area, although these changes were not significant. Tensile testing following pickling in regular sulphuric acid solutions showed a slight reduction in ductility due to the pickling. In general the embrittling effects of pickling are not permanent in cast steel. That is, changes in physical properties tend to return to their original values after a suitable time interval.



PLANT EXPANSION AND EQUIPMENT BUYING

Automotive Equipment Purchases in Prospect — General Demand Holding

WITH the automotive industry again showing interest in machine tool buying, the market this month is taking on added life. With car manufacturers committed to the earlier introduction of new models, one large General Motors unit is completing equipment purchases estimated at \$300,000, and another is expected to need \$150,000 to \$200,000 worth of tools. Ford is issuing tentative inquiries for a parts manufacturing development in Japan.

Buying from other sources is fairly well maintained. The Santa Fe railroad has added a 26-in. lathe and a turret lathe to its recently issued list. A large Chicago district steel company is expected soon to issue inquiries for a number of tools. A railroad car manufacturing company is also asking for prices on tools, but the inquiries are said to be for estimating purposes only.

◀ NORTH ATLANTIC ▶

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Feb. 15 for magnet wire (Schedule 4232), flame-proof electric cable (Schedule 4231), 3000 lb. nickel shot form, for use in connection with high tensile and alloy cast iron castings (Schedule 4202) for Brooklyn Navy Yard; until Feb. 19, 1450 bronze door latches for Brooklyn, Sewall's Point and Mare Island navy yards (Schedule 4236), 10,000 chemical sounding machine tubes (Schedule 4251) for Brooklyn yard.

General American Tank Storage & Terminal Co., 122 East Forty-second Street, New York, plans new bulk oil storage and distributing terminal units at Carteret, N. J. Cost over \$40,000 with tanks and other equipment. Company is affiliated with American Tank Car Corp., same address, with headquarters at Chicago.

Peerless Weighing Machine Co., 245 Fifth Avenue, New York, a subsidiary of General Vending Corp., same address, has leased about 16,500 sq. ft. in factory at Wilbur Avenue and Twenty-third Street, Long Island City, for new factory branch and service works. Present branch at Long Island City will be removed to new location and capacity increased.

Tropper Brass Turning & Mfg. Co., Inc., New York, has been organized by Moses Tropper, 2960 West Thirty-second Street, Brooklyn, and associates, to manufacture brass, bronze and kindred metal products. Company will take over concern of same name at 103 Mott Street, New York.

Southern Kraft Corp., 220 East Forty-second Street, New York, a subsidiary of International Paper Co., same address, plans extensions and improvements in water facilities at paper mill at Panama City, Fla., including installation of pumping equipment, filter machinery and other power equipment. Cost over \$75,000.

Board of Education, Park Avenue and Fifty-ninth Street, New York, plans manual training department in new high school at Tottenville, S. I., for which bids are being asked on general contract. Fund of

\$976,900 has been arranged. W. C. Martin, Flatbush Avenue Extension and Concord Street, Brooklyn, is architect and superintendent for board.

Amazon Metal Letter Co., Inc., New York, has been organized by Benjamin Gelosky, 60 Winthrop Street, and I. J. Messinger, 59 Seigel Street, both Brooklyn, to manufacture metal signs and electric displays, etc.

Third Avenue Railway System, 2396 Third Avenue, New York, has let general contract to Maryland Metal Building Co., 30 Church Street, for one-story machinery storage and equipment building, 25 x 63 ft.

R. J. Scott, Inc., Metuchen, N. J., recently organized under New York laws to manufacture roofing products, has acquired former local plant of Empire Floor & Wall Tile Co., and will remodel for new plant.

Sovereign Machinery Co., Newark, N. J., has been organized under direction of Jacob Slavitt, 17 Academy Street, representative, to manufacture machinery and parts.

Thermoid Co., Whitehead Road, Trenton, N. J., manufacturer of brake lining and kindred products, has acquired property heretofore owned by Roller Bearing Co. of America, Inc., and will use in part for expansion.

G. Reinke Machinery & Tool Co., Newark, has leased about 6500 sq. ft. in building at Dickerson Avenue and Duryea Street, for local plant.

Quartermaster Depot, Twenty-first and Johnston Streets, Philadelphia, asks bids until Feb. 21 for 50,000 lb. nailless galvanized flat strapping, 5/8 in. wide (Circular 258).

Board of Education, Administration Building, Philadelphia, plans manual training department in new multi-story high schools at Twenty-third and Norris Streets, and at Twenty-second and Brown Streets, each to cost over \$500,000. Irwin T. Catharine is architect for board.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until

Feb. 15 for metal aircraft propeller blades (Schedule 4242); until Feb. 19, one motor-driven milling machine (Schedule 4252) for Philadelphia Navy Yard.

Quartermaster Supply Officer, Army Base, Brooklyn, asks bids until Feb. 21 for steel wire casting brushes, motor brushes, etc. (Circular 204).

◀ NEW ENGLAND ▶

Metal Products Corp., 510 Campbell Avenue, West Haven, Conn., has engaged Marvin R. Hamer, New Haven, Conn., architect, to complete plans for one-story addition, 30 x 110 ft. Cost close to \$25,000 with equipment.

Avolater Corp., Boston, has been organized by Lewis E. and Robert F. Wilkinson, 2 Vestry Terrace, Beverly, Mass., and associates, to manufacture airplanes and parts, including special gliding aircraft.

National Can Co., 71 Locust Street, Boston, manufacturer of tin cans and other metal containers, has taken out a permit for one-story addition for storage and distribution. Cost close to \$25,000 with equipment.

American Appliance Co., New Haven, Conn., has been organized, capital \$50,000, by Arthur L. Parmelee, West Haven, Conn., and Robert B. Dods, Jr., New Haven, to manufacture heating equipment and appliances.

◀ OHIO AND INDIANA ▶

Cleveland Wax Paper Co., 13831 Triskett Road, Cleveland, has let general contract to S. W. Emerson Co., 1836 Euclid Avenue, for one-story addition, 80 x 90 ft. Cost about \$25,000 with equipment.

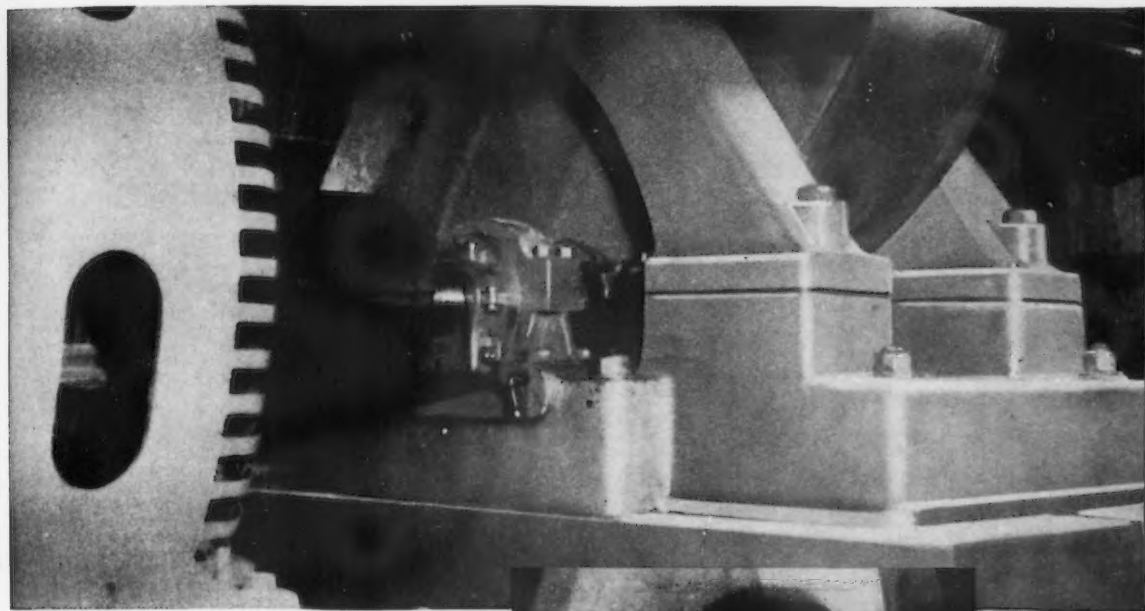
Hobart Mfg. Co., Troy, Ohio, manufacturer of electric mixing machines, dishwashing machines, parts, etc., has purchased local plant and business of Troy Match Plate Co., manufacturer of brass, aluminum and other metal castings, and will operate as a subsidiary.

Andrew Jergens Co., 2535 Spring Grove Avenue, Cincinnati, manufacturer of soaps and allied products, will soon take bids on general contract for two-story top addition. Cost over \$45,000 with equipment. Tietig & Lee, 34 West Sixth Street, are architects.

Interest Computing Machine Corp., Columbus, Ohio, has been organized by Orton A. Reid and N. B. Houghton, care of Floyd A. Johnston, 12 North Third Street, representative, to manufacture tabulating machines and parts.

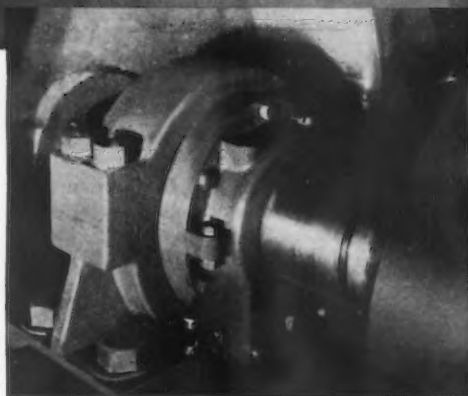
Material Division, Air Corps, Wright Field, Dayton, Ohio, asks bids until Feb. 15 for 181 suction-type gage assemblies (Circular 469); until Feb. 19, indicator assemblies, thermocouple type (Circular 455), 25 transformers and eight regulators (Circular 466); until Feb. 20, steel tape armored cable (Circular 462); until Feb. 25, 552 flare rack assemblies (Circular 467).

Friction Fighting BRUTES



Rubber Grinding Mill Drive employing special double cage assembly, 6 7/8" bore Fafnir Roller Bearing Pillow Block

For the Tough Jobs



700 H.P. at 600 r.p.m. is the job assigned to these Fafnir Roller Bearing Pillow Blocks in a rubber grinding mill. It's typical of the installations which are occurring with increasing frequency—applications where the power savings which anti-friction bearings can deliver mount into large figures—where dependability is vital—where compact design is all-important. Fafnir Heavy Duty Industrial Roller Bearings are the economical answer.

In the illustrated application 40% to

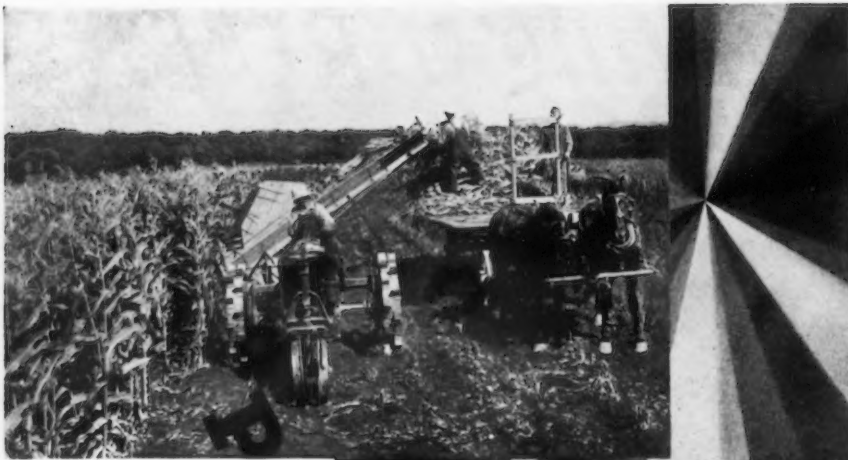
50% was saved in power consumption, much more in lubrication costs, and Fafnir Roller Bearings practically eliminated the ever-present bearing breakdown problem despite the severe over-loads which frequently occur.

Fafnir offers a comprehensive line of heavy duty industrial roller bearings. Write for complete information. THE FAFNIR BEARING COMPANY, New Britain, Conn. Atlanta . . . Chicago . . . Cleveland . . . Dallas . . . Detroit . . . Milwaukee . . . Minneapolis . . . New York . . . Philadelphia.



News of the anti-friction bearing progress is the basis of every issue of "The Dragon." Let us add your name to the mailing list.

FAFNIR BALL BEARINGS



BETTER PARTNERS with SHAFTING

COLD DRAWN BARS

TURNED AND

● GROUND SHAFTING

FREE-CUTTING

● SCREW STOCK

EXTRA WIDE FLATS

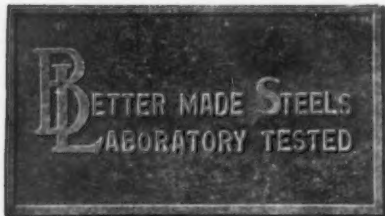
●

SPECIAL SECTIONS

●

AND ALLOY STEEL

Specifications and applications of B. & L. Steel Shafting are shown in the new Folder No. 4-A



BLISS & LAUGHLIN, INC.

HARVEY, ILL. Sales Offices in all Principal Cities BUFFALO, N.Y.

Van Wert Foundry, Van Wert, Ohio, has been acquired by new interests, headed by Samuel Devore and associates, from People's Savings Bank, which has held property for some time past. Plant has been closed about four years. New owner will make improvements and resume production at early date, specializing in production of iron and allied castings.

Contracting Officer, Quartermaster Corps, Jeffersonville, Ind., asks bids until Feb. 21 for one gasoline-operated shovel and excavator machine (Circular 58); until Feb. 25, one rock crusher, power shovel, road grader, two road scrapers, four drag scrapers, rooster plow, road or pavement plow, planer, saw mill (Circular 63), for parts for army ranges No. 5 (Circular 62).

THE Farmer, the Implement Maker and the Steel Manufacturer are all partners in developing the mechanical efficiency represented in this picture.

The modern corn binder—that cuts, bundles, ties and loads the corn automatically—is typical of today's machinery which has lightened the burdens of yesterday, in field and factory in every industry.

Cold Drawn Steel and Shafting are the basic materials that men work with to improve their methods, machines and products—and the better the steel, the better the results!

◀ BUFFALO DISTRICT ▶

Standard Brewing Co., 440 Lake Avenue, Rochester, N. Y., has let general contract to A. Friederich & Sons Co., 710 Lake Avenue, for two-story and basement addition, 25 x 60 ft. Cost close to \$40,000 with equipment.

Rome Grader & Machinery Corp., Rome, N. Y., has been organized by J. Merle Patterson, 201 East Linden Street, and George D. Finney, 111 East Pine Street, capital \$100,000, to manufacture road machinery, concrete mixing machinery and parts.

Red Lake Gold Shore Mines, Ltd., Toronto, Ont., represented by Brott & Templeton, Inc., Liberty Bank Building,

Buffalo, securities, is disposing of stock issue totaling about \$100,000, part of fund to be used for development of gold-mining properties with installation of conveying, hoisting, loading and other mechanical-handling equipment.

◀ SOUTHWEST ▶

Loose Leaf Metals Co., 6816 Arsenal Street, St. Louis, has awarded general contract to Conduit Contracting Co., 2317 Tennessee Street, for one-story addition for storage and distribution, 65 x 100 ft. Cost about \$30,000 with equipment.

Board of Education, Library Building, Kansas City, Mo., George Melcher, superintendent, will ask bids on general contract early in spring for three-story and basement addition to mechanical shop at Twenty-second and Charlotte Streets. Cost over \$100,000 with equipment. Charles A. Smith, Finance Building, is architect; N. W. Downes, last noted address, is mechanical engineer.

Monsanto Chemical Co., 1724 South Second Street, St. Louis, manufacturer of industrial chemicals, etc., has approved plans for addition to power house at works at Monsanto, including boiler and engine departments. Cost about \$90,000 with equipment. Stone & Webster Engineering Corp., 1700 South Second Street, is consulting engineer.

Board of Education, Blackwell, Okla., plans manual training department in new three-story high school, for which general contract has been let to Mattison-Wallack Co., Key Building, Oklahoma City, Okla.; superstructure will begin soon. Cost about \$200,000. Leland I. Shumway, Alexander Building, Tulsa, Okla., is architect; Benjamin F. Cook, 114 West Tenth Street, Kansas City, Mo., is mechanical engineer.

Griesedieck Brothers Brewery Co., 1926 Shenandoah Avenue, St. Louis, has let general contract to J. E. Williams Construction Co., University City, Mo., for extensions and improvements. Cost about \$70,000 with machinery. William R. Ittner, Inc., Continental Life Building, is architect.

Greenville Cotton Oil Co., Greenville, Tex., plans rebuilding part of cottonseed oil mill recently destroyed by fire. Loss close to \$50,000 with equipment.

United States Engineer Office, Galveston, Tex., asks bids until Feb. 11 for propellers and set of patterns (Circular 157).

City Council, Santa Anna, Tex., will soon take bids for pumping machinery and accessories, pipe lines, etc., for municipal waterworks. Fund of \$35,000 has been arranged through Federal aid. F. J. Von Zuben, Fair Building, Fort Worth, Tex., is consulting engineer.

◀ MIDDLE WEST ▶

Fleischmann Malting Co., 327 South La Salle Street, Chicago, has asked bids on general contract for four-story addition to malt works, 150 x 220 ft. Cost about \$200,000 with equipment.

Department of Light and Water, City Hall, New Ulm, Minn., asks bids until Feb. 15 for ash-handling equipment for municipal electric light and power plant. Bids will be asked soon for new stokers for boiler house at station. Carl W. Franks, City Hall, is city engineer in charge.

Hamm Brewing Co., 681 East Minnehaha Street, St. Paul, Minn., has superstructure under way for five-story malting unit, 100 x 125 ft., for which general contract recently was let to William Baumeister Construction Co., Pioneer Building. Cost about \$125,000 with machinery. C. H. Johnston, 350 Robert Street, is architect.

Lewis F. Ita Co., Burlington, Iowa, manufacturer of florists' supplies and equipment, including wire frames, wire brackets, etc., plans rebuilding part of one-story plant recently destroyed by fire. Loss about \$30,000 with equipment.

Central Tools, Inc., 80 East Jackson Boulevard, Chicago, has been organized by Samuel R. Wittelle and E. M. Holdt, to manufacture tools and kindred mechanical equipment.

BELL SYSTEM TELETYPEWRITER SERVICE IS THE



VITAL LINK

Factories and sales offices are often located at different points today . . . but all units must be operated as one if economy and efficiency are to be achieved.

Bell System Teletypewriter Service makes this possible . . . through the instantaneous typewritten exchange of messages of every kind—orders, specifications, inquiries, stock control, production scheduling, shipping instructions, administrative matters, accounting details, credit information, and many other things.

The Reading Iron Company, which connects plants at Reading and Danville, Pa., with general sales office in Philadelphia, finds the service "extremely valuable" in all phases of operation.

"The accuracy and speed of Teletypewriter Service permit better planning at the mills," says Mr. W. S. Shiffer, General Manager of Sales, "and greatly increase the efficiency of our service to customers without increasing our communication cost. It is really a vital link in our business."

Your use of Teletypewriter Service might be for entirely different purposes . . . it might be to outside concerns, rather than separated units of your own company. Whatever your requirements, you should have full information about this modern service . . . and how it can be of value to you. The local Bell Telephone office will gladly furnish it on request.



"Constantly Improved"

LINK-BELT CHAINS

for Drives and Conveyors



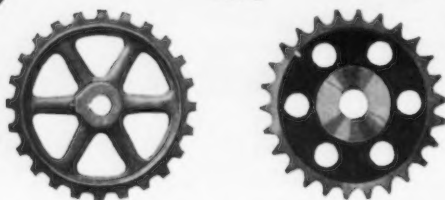
ONE of the reasons for the preference accorded Link-Belt Chains and Sprockets is that our research, experimental and laboratory departments are constantly at work to develop increased durability and qualities which result in greater satisfaction to the user. We are never satisfied. Today's durability and performance records are just marks to better.

Specify Link-Belt Chains and Sprockets. This Identifying Trade Mark is assurance that you are getting the genuine Link-Belt product. Send for catalog.

LINK-BELT COMPANY

Leading Manufacturer of Equipment for Handling Materials
Mechanically and Transmitting Power Positively
CHICAGO • PHILADELPHIA • INDIANAPOLIS
ATLANTA • SAN FRANCISCO • TORONTO
Offices in Principal Cities

5170-G



Common Council, Preston, Minn., is arranging special election about April 1 to approve bonds for \$40,000 for extensions and improvements in municipal electric light and power plant, including installation of new Diesel engine-generating unit and accessory equipment. G. M. Orr, Baker Building, Minneapolis, Minn., is consulting engineer.

Delta Mfg. Co., 3775 North Holton Street, Milwaukee, manufacturer of metal and wood-working tools for home hobby shops, etc., has taken long-term lease on new plant, 195 x 218 ft., one-story, with wings, 50 x 123 ft. and 40 x 60 ft., to be built at 620 East Vienna Avenue, Milwaukee, by Bischoff Realty Co., care of Frank F. Drolshagen, local architect, 647 West Virginia Street. Work will begin about March 1. Herbert E. Tautz is president of Delta company.

Marathon County Board of Supervisors, Wausau, Wis., has authorized appropriation of \$43,000 for building and equipping new highway garage and service station as emergency relief project. J. A. Clark is County highway commissioner.

Board of Vocational Education, Oshkosh, Wis., is making survey to determine needs of new equipment and replacements of machinery and tools in vocational training institute. A. M. Bleyer is director.

Durck Tank Works, Inc., 2426 North Thirtieth Street, Milwaukee, specializing in brewery vessels, has placed general contract with Edward Steigerwald & Sons, Inc., 5310 West State Street, for an addition 40 x 62 ft., part one-story and basement. F. F. Drolshagen, 647 West Virginia Street, is architect.

◀ SOUTH CENTRAL ▶

Town Council, Monterey, Tenn., asks bids until Feb. 13 for pumping machinery and accessories, pipe lines, elevated tank and tower, etc., for municipal waterworks. J. B. McCrary Engineering Corp., Atlanta, Ga., is consulting engineer.

Crystal Springs Distillery, Crystal Springs, Ky., has plans for one and multi-story additions, and will carry out superstructure with day labor. Cost close to \$50,000 with equipment. Walter C. Wagner, Breslin Building, Louisville, is architect.

Plough, Inc., Memphis, Tenn., manufacturer of Chemical products, will have plans drawn by Hanker & Cairns, 123 South Court Street, architects, for new multi-unit plant, including power house and other mechanical departments. Arthur L. Nelson Engineers, Inc., 31 St. James Avenue, Boston, is consulting engineer and now making surveys for buildings. Bids will be asked on general contract in about 30 days. Cost over \$500,000 with equipment.

◀ MICHIGAN DISTRICT ▶

Banner Brewing Co., Saginaw, Mich., has asked bids on general contract for extensions and improvements. Additional equipment will be installed. Cost over \$50,000 with machinery. George B. Bright, 2615 Twelfth Street, Detroit, is engineer.

Naph-Sol Refining Co., Muskegon, Mich., plans new oil refinery at North Muskegon, including storage and distributing units. Cost about \$75,000 with equipment. Company is affiliated with Universal Oil Products Co., 310 South Michigan Avenue, Chicago.

Goebel Brewing Co., Rivard and Maple Streets, Detroit, will soon begin superstructure for two-story and basement addition, for which general contract recently was let to Otto Misch Co., 159 East Columbia Street, to be sued primarily as a stock house. Cost about \$50,000 with equipment. Harley & Ellington, Inc., Stroh Building, is architect and engineer.

Safety Cook Stove Co., 3156 Penobscot Building, Detroit, has been organized as a subsidiary of Safety Products, Inc., 22239 John R. Street, to manufacture stoves, parts, burners, etc.

City Council, Grand Haven, Mich., has revised plans for extensions and improvements in municipal electric light and power plant, including new equipment. Cost close to \$70,000. Hamilton & Weeber, Grand Rapids, Mich., are consulting engineers.

◀ SOUTH ATLANTIC ▶

Brooks Foundry & Machine Co., 521 Marietta Street, N. W., Atlanta, Ga., manufacturer of metal castings, machine parts, etc., has plans for two-story addition, 48 x 50 ft. Cost about \$30,000 with equipment. R. F. Thetford will be in charge of erection.

United States Engineer Office, Wilmington, N. C., asks bids until Feb. 12 for 865 tons of interlocking steel sheet piling (Circular 114).

Coca-Cola Co., Atlanta, Ga., manufacturer of beverages, has let general contract to Cogswell Construction Co., 406 Park Avenue, Baltimore, for one-story addition, 215 x 358 ft., to branch plant at Baltimore, for storage and distribution, to include conveying, elevating and other mechanical-handling equipment. Cost about \$100,000 with machinery. Robert & Co., Inc., Bona Allen Building, Atlanta, is architect and engineer.

Llewellyn Machinery Corp., N. E. Second Avenue and Seventy-first Street, Miami, Fla., machinery and parts, plans rebuilding part of storage and distributing plant recently destroyed by fire. Loss about \$25,000 with equipment.

P
H
I
L
O



QUALITY • SERVICE • DEPENDABILITY

n., asks
machinery
ted tank
erworks.
... Atlan-

Crystal
nd multi-
t super-
close to
C. Wag-
is archi-

manufac-
ve plans
3 South
v multi-
use and
rthur L.
nes Ave-
eer and
rs. Bids
in about
h equip-

CT ▶

. Mich.
ract for
dditional
ost over
rge B.
troit, is

. Mich.
uskegon,
g units.
t. Com-
ll Prod-
Avenue.

d Maple
a super-
nent ad-
recently
East Co-
ly as a
00 with
c., Stroh
r.

enobscot
zed as a
.., 22289
stoves,

ch., has
improve-
t and
quipment.
Weeber,
ing en-

C ▶

Co., 521
a, Ga.,
machine
ry addi-
000 with
be in

Vilming-
for 305
ng (Cir-

manufac-
contract
6 Park
addition,
t Balti-
to in-
her me-
t about
& Co.,
anta, is

E. Sec-
et, Mi-
lans re-
ributing
Loss

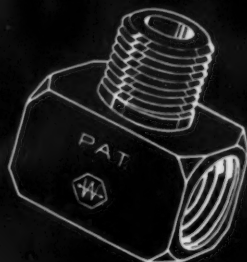
Producing FERRO-ALLOYS

Ohio Ferro-Alloys Corporation
Canton, Ohio

WEATHERHEAD Inverted Fittings

BETTER STRONGER

... CREATED FOR TODAY'S DEMANDS



**SPECIALISTS
FOR
SPECIAL
WORK**

Inverted fittings as patented by the Weatherhead Company allow the user a stronger, lighter and more adaptable connection. Regardless of specifications, Weatherhead can produce any fitting required in your manufacture and do it economically. Weatherhead fittings are strictly in keeping with modern design and eliminate unsightliness of ordinary connections. Send your specifications and let us quote on your requirements. The Weatherhead Co., 644 Frankfort Ave., Cleveland, Ohio.

TUBE SERVICE PARTS OF ALL TYPES IN STOCK

WESTERN PA. DISTRICT

Penn-Indiana Brewery Co., Indiana, Pa., is considering an addition, to be equipped as a mechanical bottling works. Cost close to \$40,000 with machinery.

United States Engineer Office, Huntington, W. Va., asks bids until Feb. 28 for operating machinery for lock on Kanawha River, Lot No. 1.

Sun Oil Co., 1608 Walnut Street, Philadelphia, has let general contract to Dawson-Evans Construction Co., 5300 Carthage Pike, St. Bernard, Ohio, for new bulk oil storage and distributing plant at Kenova, W. Va. Cost close to \$30,000 with equipment.

Common Council, Cowen, W. Va., plans installation of pumping machinery and accessory equipment, pipe lines and other equipment. Fund of \$30,000 is being arranged. Wayne Hoover, mayor, is active in project.

Borough Council, Turtle Creek, Pa., is considering new municipal electric light and power plant. Cost over \$100,000 with machinery. J. G. McClintock, chairman of lighting committee, is in charge.

WASHINGTON DISTRICT

Purchasing and Contracting Officer, Holabird Quartermaster Depot, Baltimore, asks bids until Feb. 21 for truck parts, including axles, brakes, bumpers, springs, transmission and clutch assemblies, radiator assemblies, switches, lighting cable, wire, engine assemblies, etc. (Circular 100).

Bureau of Yards and Docks, Navy Department, Washington, asks bids until Feb. 20 for fly-ash conveyor system for power house at Marine Barracks, Quantico, Va. (Specification 7870); until Feb. 27, two 20-ton locomotive cranes for Washington Navy Yard (Specification 7857).

Procurement Officer, Chemical Warfare Service, Edgewood Arsenal, Md., asks bids until Feb. 18 for one complete continuous rectifying unit for recovery of acetic acid (Circular 87).

Board of District Commissioners, District Building, Washington, plans call for

bids early in March for initial units of new municipal sewage treatment plant; early in April bids will be asked for tanks and auxiliary equipment; about May 15 for pumping machinery and accessory equipment, sludge digestion tanks and allied equipment; early in June for power plant and machinery. Fund of \$8,000,000 has been arranged through Federal aid, of which amount about \$1,200,000 will be used for power plant and equipment. Metcalf & Eddy, Statler Building, Boston, are consulting engineers.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Feb. 15 for taper cotter pins, escutcheon pins, etc., for Eastern and Western navy yards (Schedule 4196).

PACIFIC COAST

Bureau of Reclamation, Denver, asks bids until Feb. 20 for one turbine galley crane with two hydraulic jacking frames of 60 and 150 tons capacity; two 30-ton trolleys and two lifting beams for Boulder power plant, Boulder Canyon Project, California - Nevada - Arizona (Specification 622-D); until Feb. 15, two motor-driven vertical-shaft pumping units with accessory equipment for Melhase-Ryan sump drainage pumping plant, Klamath, Ore., project (Specification 660-D); until Feb. 18, one motor-driven vertical-shaft pumping unit, 5½ ft. per sec., and one similar type pumping unit of 13 ft. per sec. for North and South pumping plants, Advancement District of Owyhee Project, Oregon-Idaho (Specification 661-D).

City Council, Winnemucca, Nev., plans new municipal water system, with electric-operated pumping station and power plant. Fund of \$35,000 has been secured through Federal aid.

Consolidated Coppermines Corp., 120 Broadway, New York, plans development of mining properties near Kimberly, Nev., including new refining plant, power house and other buildings. Loan of \$3,000,000 has been arranged with RFC, considerable part of fund to be used for purpose noted.

General Brewing Corp., 2601 Newhall Street, San Francisco, has let general contract to Cahill Brothers, 206 Sansome Street, for one-story addition. Cost about \$40,000 with equipment. C. H. Snyder,

251 Kearny Street, is mechanical engineer; Fred H. Meyer, 525 Market Street, is architect.

Horluck Brewery Co., Seattle, George F. Horluck, plans addition to be equipped as a mechanical bottling works. Cost over \$35,000 with machinery. It is proposed to begin work early in spring.

Bureau of Power and Light, 207 South Broadway, Los Angeles, has authorized plans for new power substation for municipal power system. Cost about \$150,000 with equipment. Plans will be completed late in March.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Feb. 15 for three refrigerating compressors, complete with motors and controls, one oil separator, two condenser circulating pumps, two brine circulating pumps, one dual suction drainer and spare parts (Schedule 4208) for Puget Sound Navy Yard; one motor-driven tool-maker's lathe and spare parts (Schedule 4201); until Feb. 19, ball bearings (Schedule 4234) for Mare Island Navy Yard.

FOREIGN

Ferranti, Ltd., Hollinwood, near Manchester, England, manufacturer of electrical apparatus, radio equipment, parts, etc., has acquired factory at Moston, a suburb of Manchester, and will improve for new plant, concentrating on radio equipment production, with facilities for employment of more than 1500 persons.

Purchasing Office, Argentine State Railways, Buenos Aires, Argentina, asks bids until March 18 for 12 overhead electric-operated traveling cranes, from 1 to 75 tons capacity.

Electrical Trust, Soviet Russian Government, Moscow, plans new hydroelectric power development on Zangi River and Lake Sevan, Armenia, to be known as Sevan Hydroelectric Cascade, comprising five or more hydroelectric generating stations, with transmission and distributing lines, substations and other structures. It is proposed also to irrigate large area of land, including installation of pumping stations and other facilities. Part of power development will be used by manufacturing plants in this district. Cost over \$5,000,000. Amtorg Trading Corp., 261 Fifth Avenue, New York, is official buying agency.

Russian Pig Iron Output Much Higher

TOTAL production of Russian pig iron for 1934 amounted to about 10,500,000 tons, which represents an increase of 3.4 million tons over 1933. This activity has placed Russia in first position in Europe for the third year in succession. Production of pig iron in the United States in 1934 was about 15,911,000 tons.

At the beginning of 1929, Russia did not have a single blast furnace in which all operations were performed by mechanical means. There are now 23 furnaces fully equipped mechanically, which represent 48 per cent of the total number.

Production of rails in 1934 was 800,000 tons, and 2480 miles of new track was laid. Output of special steels for automobiles was sufficient to permit assemblies of 70,000 cars in 1934, compared with 50,000 cars in 1933.



- MACHINIST** "I prefer **MoTUNG** tools because they outcut other high speed steels and break less because they are tougher. Our piece workers prefer **MoTUNG** tools because they are equal to or better than 18-4-1 in all applications."
- TOOLMAKER** "Yes, and **MoTUNG** works more easily and costs less to machine. The hardened tools are sharpened with less cracks."
- METALLURGIST** "MoTUNG heat treats at least 150° lower and has lower heat treating costs."
- PURCHASING AGENT** "MoTUNG is economical because it weighs 9% less than 18-4-1. The basic materials are mined in the U. S. A., and we can depend on a stable price and supply."
- PRESIDENT** "All right! Let's keep up with the economies some of our competitors and other manufacturers are making. I've been looking over a list of successful **MoTUNG** applications made during the past three years and the proof of quality is conclusive. In addition, this idea of not being affected by fluctuations in price and supply appeals to me."

Ask your tool manufacturer for **MoTUNG** tools or write us for the new **MoTUNG** Booklet No. 104.



MoTUNG, a brand of **MO-MAX** High Speed Steel, is available through any of the offices or warehouses listed below.

PRESENTED BY

UNIVERSAL STEEL COMPANY AND **CYCLOPS STEEL COMPANY**
BRIDGEVILLE, PA. TITUSVILLE, PA.

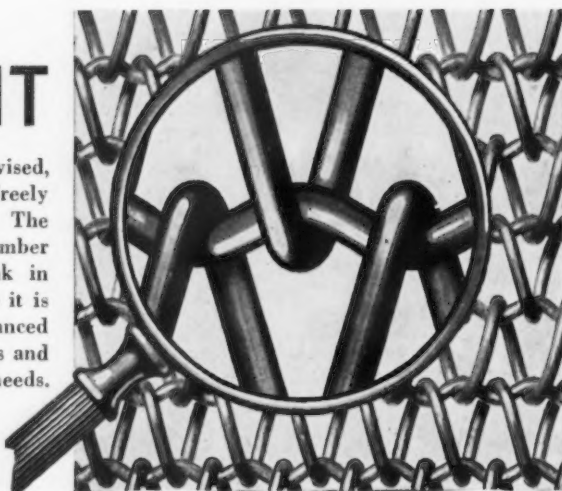
Sales Offices: Chicago . Cleveland . Detroit . Hartford . Indianapolis . Los Angeles . Milwaukee . Norfolk
New York . Philadelphia . Pittsburgh . San Francisco . St. Louis . Syracuse . Toronto . Washington . Worcester
Warehouses: Bridgeville . Titusville . Chicago . Detroit . Worcester

Ⓜ 1074

STUDY IT

The most flexible belt yet devised, because the spirals work freely on the reinforcing strut. The crimped reinforcement member eliminates tendency to shrink in width and elongate. Because it is balanced, it runs true. Balanced Spiral is available in all sizes and kinds of wire to suit your needs. Request full particulars.

U. S. Patent
No. 1,952,873



WICKWIRE SPENCER STEEL COMPANY

New York City Worcester Buffalo Chicago San Francisco

WISSCO
CONVEYOR BELTS

Send for the new Conveyor
Belt *HAND BOOK* . . .

Improved Method for Determining Corrosion Resistance

(CONCLUDED FROM PAGE 15)

Total loss for 48 hr. = 0.2334 gm.
Area = 7.56 sq. in.

Loss in milligrams per sq. in. =
(233.4 ÷ 7.56) = 30.87

Time = 48 hr.

Specific gravity = 7.9

Substituting in the Huey Formula:

$$R = \frac{43.9 \times 0.2334}{7.56 \times 7.9 \times 48} = 0.00357 \text{ in.}$$

Substituting in the writer's formula for this grade:

$$P \times 15 = \frac{L}{8630.5} = \frac{30.87}{8630.5} = 0.00357 \text{ in.}$$

Substituting in the writer's formula for this grade:

$$P \times 15 = \frac{L}{8630.5} = \frac{30.87}{8630.5} = 0.00357 \text{ in.}$$

In case it is desired to dilute stronger nitric acid to 65 per cent by weight, the writer uses the formula which was published some time ago.¹

¹The Chemical Analysis of Special Steels, John Wiley & Sons Co., 440 Fourth Ave., New York, N. Y.

$$W = \left(\frac{P - p}{p} \right) A$$

P = percentage by weight of the more concentrated acid to be diluted.

p = the lower percentage which is desired.

A = specific gravity of the higher percentage acid.

W = the amount of water in ml. necessary to add to 1 ml. of the concentrated solution to reduce it to the desired lower percentage.

Also, some of the acid can be weighed in a small glass stoppered weighing bottle. Transfer the weighed acid to a beaker; dilute it with distilled water and titrate it with standard normal sodium hydroxide solution. Therefrom calculate its percentage and the amount of distilled water to add to a given volume to reduce the acidity to 65 per cent by weight.

For making corrosion tests, the concentrated nitric acid must be strictly C.P. The operator must also be extremely careful not to contaminate the pure acid with small quantities of hydrochloric

acid, chlorine fumes or ammonium chloride fumes, or any other corrosive substance present in the atmosphere of the laboratory. The distilled water should show no chlorine test, and all graduated vessels should be freed of fumes before the acid is measured into the boiling flask.

As Huey pointed out in his original paper, the penetration figures cannot be taken literally but are none the less of much value for comparison of the performance of metals that are quite resistant to this acid attack. If pitting does occur, the penetration figures are usually high enough to cause rejection.

To quote Huey, this corrosion test will "yield accurate quantitative data that represent truly the corrosion resistance of the metal sample in the acid test used." In another paragraph he writes that the test method described "yields accurate quantitative data that may be used in research to show the effect on corrosion resistance of slight variations in heat treatment or chemical composition, or whether a given alloy is normal with respect to corrosion resistance."

This paper is published by permission of the executive department of the Crucible Steel Company of America.

Pension Plans in the Iron and Steel Industry

(CONTINUED FROM PAGE 17)

average number of workers employed by the corporation:

Year	Average Number of Employees	Em-ployees on Pension Roll	Per Cent of Active Em-ployees
1923	260,786	4,054	1.5
1924	246,753	4,478	1.8
1925	249,833	5,084	2.0
1926	253,199	5,737	2.2
1927	231,549	6,388	2.7
1928	221,702	7,000	3.1
1929	224,980	7,420	3.3
1930	211,055	7,956	3.8
1931	203,674	10,437	5.1
1932	158,032	11,684	7.4
1933	172,577	12,230	7.1

Here we have a steady increase of pensioners from 4054 in 1923 to 12,230 in 1933. In terms of active workers, pensioners amounted to 1.5 per cent in 1923

The WISE CHOICE!



• • • in the specification of pipe

What kind of service will it give when installed and how long will it last, are the two main points the wise buyer considers in his choice of pipe. To give the ultimate in performance, pipe must be clean and smooth, inside and outside; that is, it must be free from mill-scale. Such scale causes corrosion and contributes to deterioration in the pipe line. NATIONAL Scale Free Pipe, therefore, is a wise choice. It is made by a special Scale Free Process, applied to butt-weld sizes $\frac{1}{2}$ to 3-inch. Here are the outstanding advantages of this clean, smooth pipe—

Minimized corrosion—particularly pitting—Clean, smooth surfaces, inside and outside—Full delivery capacity—less friction loss—No damage to valve seats; no clogging of small orifices—Greater strength at the weld.

When you order standard pipe for any purpose, be sure to specify NATIONAL Scale Free and secure the maximum in performance and economy. Large use by discriminating buyers, continued through many years, has made it—*America's Standard Wrought Pipe.*

CHROMATE TREATMENT—All National Galvanized Pipe is given a special chromate treatment to resist discoloration and the formation of white rust. This patented process preserves that smooth, glistening surface or metallic lustre which is characteristic of good galvanizing.

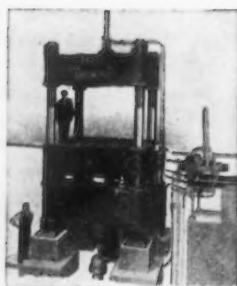
NATIONAL TUBE COMPANY • Pittsburgh, Pa.

*Pacific Coast Distributors—COLUMBIA STEEL CO., San Francisco, Calif.
Export Distributors—UNITED STATES STEEL PRODUCTS CO., New York, N. Y.*

United States Steel  *Corporation Subsidiary*

NATIONAL SCALE FREE PIPE SPELLERIZED

FARREL-BIRMINGHAM HYDRAULIC PRESSES for Metal Forming



Left — 1500-ton Hydraulic Flanging Press, 97" x 85" clear between tie rods, 72" maximum opening, 48" stroke, complete with control and operating valves.



Right — 200-ton Electric-Oil Hydraulic Press, 49½" x 80" platens, 24" dia. ram, 24" stroke, electrically operated and controlled, self-contained.

These are only two examples of a variety of Farrel-Birmingham Hydraulic Presses for the fabrication of parts from steel sheet and plate. We are prepared to design and build presses for specific purposes . . . any size . . . any capacity . . . any pressure. Your press problems will have the benefit of sound engineering and practical experience.

FARREL-BIRMINGHAM COMPANY, INC.
100 Main Street, Ansonia, Conn.

to slightly more than 7 per cent in 1933. The picture is somewhat distorted by the relatively low number of employees active in 1932 and 1933 and the fact that the 1931 revision of the pension plan made mandatory the retirement of employees who reach the age of 70. But as far back as January, 1927, when a survey of employees was made by the company, there were 23,994 workers who had been in continuous service of the corporation 25 years or more. The U. S. Steel Corp'n. cannot be such a hard taskmaster as some would have us believe. The average age level of employees tends to rise in well established companies. Since 1923 there has been a threefold increase of pensioners in number, and almost a fivefold increase in terms of active employees.

Now for the third test, the percentage of pensions paid in terms of payroll. That, too, has been steadily increasing.

Year	Amount of Payroll	Pensions Paid	Per Cent of Pension to Payroll
1923	\$469,502,634	\$1,448,113	0.31
1924	442,458,577	1,683,921	0.38
1925	456,740,355	2,068,653	0.45
1926	467,409,446	2,537,916	0.54
1927	430,727,095	3,003,209	0.7
1928	413,699,720	3,488,488	0.84
1929	420,072,851	3,940,678	0.94
1930	391,271,366	4,359,445	1.11
1931	266,871,413	5,830,447	2.2
1932	133,912,809	7,524,487	5.69
1933	163,149,503	7,716,304	4.73

For many years after its establishment in 1911, the cost of the pension system of the United States Steel Corp'n. was negligible, in terms of a percentage of payroll. Up to 1930 it was still under 1 per cent, but since then it has surged upward. This has been partly due to the removal in 1931 of maximum and minimum allowances, the forced retirement of all employees over 70, and the drop in total amount of payroll, but the experience of the corporation has not been greatly different from other pension costs I have been able to review. Employers should realize that, however modest initial pension costs may be, they must look forward to substantial increases over a period of years. For that reason, if no other, it is desirable that pension plans be placed on a contributory basis.



The West Leechburg Plan

One of the outstanding contributory plans in the iron and steel industry is that of the West Leechburg Steel Co. Here the employee pays from \$1 to \$7 per month on pay of \$900, or less, to \$4,500, and 2 per cent on pay of \$4,500 or over. This rate of contribution is low, but of course this can only be judged in the light of benefits received. A pension plan whose benefits are substantially more generous provides the following sliding scale of contributions by employees: those less than 35 contribute 3½ per cent of current compensation, 35 or more but less than 45, 4 per cent, 45 or more but less than 50, 4½ per cent, and 50 or more but less than 60, 5 per cent. With declining interest earnings, any pension plan, however carried, should in my judgment require employees to contribute on an average from 3.5 per cent to 4 per cent. That is a conservative requirement.

Participation of employees in the West Leechburg plan is optional after six months of service. The trend of opinion and practice is to require employee participation as a condition of employment. Employers realize that if the worker fails to provide for himself, the company will still feel a moral obligation to take care of him, if he becomes superannuated. Hence, the employee who will not assume part of his retirement cost may not be a desirable employee.

Collective Thinking Needed

To sum up: there has been no collective thinking on pensions in the iron and steel industry. There has, however, been a great deal of consideration given to the problem by individual manufacturers. A substantial number of plans are in operation. Their provisions differ widely, particularly in important details. We do not know whether these plans are too generous or too meager. We do know that the full brunt of their cost is being borne by the progressive manufacturer. It would seem that pensions require a wider base, and more general contribution by employees. That may be afforded by governmental plans, but these I feel sure will require supplementation. Finally the salient facts can be best developed through appropriate pension studies by the industry itself, through its component branches.



Under the most favorable conditions and with the best of modern facilities, Inland Tin Plate is carefully inspected.

Here Are Pertinent FACTS about INLAND TIN PLATE



WE make no extravagant claims, but here are some pertinent facts about INLAND TIN PLATE which we believe will interest you:

1. It is produced by the Cold Reduction method.
2. Phosphorus and silicon, elements that adversely affect the quality of tin plate, have been practically eliminated from the base metal.
3. Our equipment is of the most modern design; our organ-

ization experienced and skilled.

4. Many of the country's leading users, large and small, have advised us that INLAND TIN PLATE offers them the high degree of uniformity, finish, and drawing quality they require.

Try INLAND TIN PLATE. We feel sure that you, like other progressive manufacturers, will discover that it merits your continued use. Inland Steel Company, 38 South Dearborn Street, Chicago.

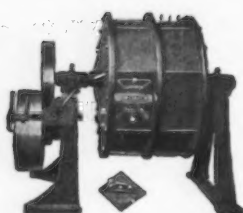
INLAND
ABLE SERVANT OF THE CENTRAL WEST
STEEL

Sheets Strip Tin Plate
Plates Structural Piling

Rails Track Accessories
Bars Rivets Billets

Sales Offices: ST. LOUIS, MILWAUKEE, ST. PAUL, DETROIT, KANSAS CITY, MO., DALLAS

Eleven Chances



Try Abbott Materials
Balls, Cones, Pins, Slugs

If January didn't show a satisfactory profit in your finishing department, there are still eleven more months to go. Eleven more chances to discard profit-eating methods.

Ball Burnishing puts small parts finishing on a production basis. It is profitable finishing and merits your consideration. Let our experimental department prove this on some of your sample parts.

The ABBOTT BALL Co.

1047 New Britain Ave.
Hartford, Connecticut

Residential Stoker Industry Is Growing Outlet for Iron and Steel

(CONCLUDED FROM PAGE 19)

of manually filling the stoker hopper with coal. This increase in the efficiency of automatic stoker equipment relieves the time-honored coal shovel of much of its usefulness. This is particularly true of some stokers installed for use with anthracite coal, which also are equipped for the mechanical removal of ashes.

Stokers have been improved in appearance, as well as in efficiency. Late types show the work of the modern designer's art and attractive finish. Not to be outdone by the modern design as incorporated in various other products, one of the more recent stoker models is made in a design that is designated as streamline.

Coal can occupy a dominant position in the field of air-conditioning, in the opinion of stoker manufacturers, and they point out that one of the principal requirements in air-conditioning where heating is included is automatic temperature control through regulation of the burning of the fuel.

Stokers Effect Fuel Economies

That homes can be heated much cheaper when the heating units are

fired with stokers is an outstanding advantage claimed by stoker manufacturers. Fuel economies that can be effected with stokers constitute one of their strong sales arguments and one on which they largely base the expectation of a large increase in stoker sales during the next few years.

Not only can coal be burned more efficiently when stoker fired, it is contended, but there is a saving in the kind of coal that can be used. Small sizes of coal, it is stated, can be used in a stoker fired with regulated feed and forced draft, or fuel in sizes that would not prove gen-



erally satisfactory for a hand-fired heating plant. This stoker coal or screenings costs less than fuel for hand-fired plants. Other advantages from the standpoint of economy claimed for the use of a stoker-fired heating equipment in the home include combustion efficiency, prevention of fuel waste, convenience, cleanliness and abatement of smoke.

One-Hundred Fifty Makers of Small Stokers

While the first mechanical device for feeding coal automatically in a furnace was developed in 1819 and the first screw feed stoker was brought out in 1895 and small stokers were designed a few years later, it was not until the war-time period that a stoker was developed for residence use. Three companies were pioneers in the manufacture of small stokers for the home, two concentrating their activity in the anthracite-consuming field and another in the bituminous coal-consuming territories. From these three original manufacturers has grown an industry composed of about 200 manufacturers of mechanical stokers, of which 150 make a small household or commercial size.

Up to Jan. 1, 1931, only about one dozen mechanical stoker manufacturers were making reports to the Bureau of Census of the United States Department of Commerce, these being makers of medium and large power industrial stokers. On that date the bureau rearranged its reports to include makers of stokers of all sizes, and the number of stokers made in the United States in 1931 as shown in reports of the Bureau of Census increased to 12,191 from 1179 manufactured during the previous year. The total rose to 14,810 in 1933. There was a further gain in 1934, although statistics for the entire year are not yet available. In January, 1932, 55 stoker manufacturers were making reports and this number increased to 83 during 1933. In the present membership of the Stoker Manufacturers' Association are 12 companies that are manufacturing household stokers. Fully half a dozen large and financially strong companies that have gained national names and reputations in other lines of manufacture have entered the domestic stoker manufacturing field.